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A FOLLOW-UP REPORT ON THE CLINICAL STUDY OF TWO HUNDRED AND FIFTY CASES OF CARDIAC ASTHMA AND A SURVEY OF AN ADDITIONAL GROUP OF TWENTY-TWO NEW CASES

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IN 1929, Palmer and White[1] published in the *Journal of the American Medical Association* an analysis of a series of 250 cases of cardiac asthma. Because this is by far the largest collection of these important cases in the literature, it is evidently worth while to present a follow-up report of the group.

INTRODUCTION—MECHANISM OF CARDIAC ASTHMA

Cardiac asthma is a name applied to a kind of dyspnea peculiar to organic cardiac disease. For this particular condition it is distinctive and is preferable to such other terms as pulmonary edema or paroxysmal dyspnea, for it is truly asthmatic in nature and it is fundamentally of cardiac origin. Cardiac asthma is paroxysmal, coming on usually in sleep but at times following exertion. An attack quickly rises to a peak, is accompanied by both inspiratory and expiratory difficulty, and frequently by a terrifying sense of suffocation which causes the patient to sit up or to stand erect and even to go to a window for air. The attacks last from a few minutes to a few hours, averaging about an hour, and leave the patient in an exhausted condition for hours or days. Adrenalin sometimes relieves the condition, but morphine and the upright position are nearly specific. Cardiac asthma is infrequently seen before middle life and is most commonly associated with cardiovascular conditions resulting in left ventricular enlargement and failure.

The exact mechanism of cardiac asthma is not known, but it is apparently induced most often by failure of the left ventricle to respond to an increased functional demand. It occurs so frequently at night with the patient asleep that it appears to be associated with an increase in the volume of blood in the pulmonary field due either to the effect of gravity in the recumbent position or to insufficiency of the left ventricle or to both of these factors. The vital capacity of the individual with serious organic heart disease is constantly approaching the border line of congestive failure as is evidenced by the frequency of dyspnea. With the vital capacity further decreased by the circulatory conditions during sleep in the recumbent position, the respiratory center is excessively stimulated and dyspnea becomes more marked. The exact relationship of Cheyne-Stokes breathing to cardiac asthma is not clear; in some cases it may induce it but in other cases there is no evidence that it does. At any rate the respiratory center is stimulated to great effort, apparently reflexly and not chemically, and the patient is awakened by terrifying respiratory distress. Assumption of the upright position, with resulting decrease in the volume of blood in the lungs, and depression of the respiratory and other nerve centers by morphine relieve the patient gradually. The left ventricle recovers, pumps out the excess of blood from the lung capillaries, and the attack is over. This explanation, helpful and attractive though it may be, is in need, for its verification or rejection, of more thorough investigation and, in particular, detailed clinical observation of patients during attacks of cardiac asthma.

Cardiac asthma is to be distinguished from pulmonary edema. They may occur together in certain individuals who are susceptible, that is, in whom the reflex of asthmatic breathing is possible. This is perhaps more commonly found in individuals belonging to asthmatic families*. The more acute the onset of pulmonary congestion or edema the more likely there is to be cardiac asthma; but many individuals have pulmonary congestion or edema, especially of chronic nature, leading even to hemoptysis, without cardiac asthma.

The presence or absence of pulmonary congestion at postmortem examination in patients dying after cardiac asthma is not necessarily of great moment in the consideration of the mechanism *during life*, for we know that in some cases the condition may progress, temporarily at least, to actual pulmonary edema, as indicated by moist râles throughout both lungs, and by bloody sputum, and then clear up; in one noteworthy case observed personally, the râles, sputum, and dyspnea completely subsided before death which was preceded by quiet easy

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*We are making a further study of the incidence of bronchial asthma and of other allergic manifestations in individuals with cardiac asthma and in their families. We have noted the coincidence a number of times, but have not yet completed a careful analysis.

breathing and an apparent state of shock as shown by gray pallor, feeble pulse, and semicomatose condition.

Cardiac asthma infrequently occurs in patients having mitral stenosis. The strong right ventricle may respond so efficiently to exertion or excitement that it pumps more blood into the pulmonary field than can pass in the same length of time through the stenosed mitral valve. Pulmonary congestion results and if marked and sudden enough may set off the asthmatic type of breathing. Gradually the excess of blood is removed from the lungs, and the attack ceases. In this type of cardiac asthma, which is much rarer than the other type, there is no cardiac weakness; the left ventricular muscle itself is strong enough, the trouble resting in the obstructive lesion of the mitral valve. Of course, the avoidance of much exertion or excitement is here the only adequate preventive measure. Hemoptysis occurs not uncommonly with attacks of cardiac asthma of this sort. As a rule, the prognosis is slightly more favorable than in those cases where the left ventricle has been overtaxed.

FOLLOW-UP ANALYSIS OF SERIES OF 250 CASES OF CARDIAC ASTHMA

(See Table.)

The 250 cases which form the basis for the present report were found in a group of 3100 cases of organic heart disease reviewed, and represent an incidence of eight per cent. One hundred and twenty-five of the cases were from hospital practice and the other half were from private practice. Of the original complete series all but 13, or five per cent, of the patients have been followed to date or to the time of their death. Every means of locating these 13 cases having failed, they were replaced by the next successive 13 cases of cardiac asthma appearing in our private records, in order to maintain an even number, 250, for statistical purposes.

In 1928, there were 80 patients of the 250 still living and 170 dead. At the present time, January 1932, only 20 or eight per cent have survived and 230 or 92 per cent are dead. The average duration of life from the onset of cardiac asthma to death was given in the original series as 1.4 years. This has been raised to 1.7 years by the longer follow-up analysis. About one out of four cases, actually 63 in number, died within six months of the onset of the cardiac asthma; 95 died during the interval between six months and two years after the onset of cardiac asthma, and 72 more lived over two years. One man died at 64 years of age of congestive failure 19 years after his original attack. This is the longest duration of symptoms in the entire series. A review of his case history reveals an atypical condition inasmuch as he had repeated attacks of rheumatism and was one of the few cases having auricular fibrillation. It is likely that a paroxysm of rapid heart action induced his original attack of cardiac asthma.

TABLE

	Follow-up Group of 250 Cases of Cardiac Asthma			Supplementary Group of 22 Cases of Cardiac Asthma		
	Living	Dead	Total	Living	Dead	Total
Number of cases	20	230	250	10	12	22
Males	10	177	187	6	11	17
Females	10	53	63	4	1	5
Over 50 years of age	17	210	227	7	12	19
Average duration in years of cardiac asthma	5.5	1.7	2.0	2.3	1.6	1.9
Hypertensive heart disease	11	157	168	4	2	6
Coronary disease	5	27	32	3	10	13
Cardiovascular syphilis	2	30	32	0	0	0
Rheumatic heart disease	2	16	18	3	0	3
Congestive failure (chronic)	7	118	125	3	8	11
Angina pectoris	3	37	40	3	4	7
Aortic regurgitation	2	56	58	1	2	3
Mitral stenosis	2	10	12	0	0	0
Pulsus alternans	1	33	34	2	6	8
Gallop rhythm	3	54	57	3	8	11
Auricular fibrillation	0	30	30	1	0	1
Intraventricular (bundle branch) block	4	27	31	2	2	4
Auriculoventricular block (partial)	1	12	13	0	0	0
Left axis deviation	6	61	67	8	1	9
Right axis deviation	1	3	4	0	0	0
Dead within 6 months after first attack of cardiac asthma		63			3	
Dead later than 6 months but within 2 years after first attack of cardiac asthma		95			5	
Dead later than 2 years after first attack of cardiac asthma		72			4	

ETIOLOGICAL CONSIDERATIONS

The 177 males that have died far outnumber the 53 females, with a ratio of more than 3 to 1. Of the total of 230 cases that died, 210 were over 50 years of age, the oldest being eighty and the youngest thirty-four. Thirty-seven patients had angina pectoris in addition to cardiac asthma. Of 18 cases with rheumatic heart disease all are dead except two young men who are doing quite well. When cardiac asthma occurs in syphilitic heart disease, a fatal termination may be expected within a fairly short time; of 32 cases with this combination 30 are now dead, 11 having died within six months and 15 others before the end of two years. Of 32 patients with disease of the coronary vessels, 27 are now dead, 13 having died within six months; thus the combination of coronary disease and cardiac asthma also makes the prognosis poor. The other 168 cases were of the hypertensive type under which group the largest actual number of cases are classified, although the highest incidence in any one kind of heart disease is in cardiovascular syphilis.

SIGNS—VALVULAR DISEASE

Mitral stenosis was found in 12 cases, 10 of whom are now dead. By far the most important valvular lesion associated with cardiac asthma is aortic regurgitation, both because it is the most common and because its consequent strain on the left ventricle hastens a terminal event. It was present in 58 cases or 28 per cent and of these 56 have died. The presence of congestive failure is a bad prognostic sign. One hundred and eighteen of 125 cases showing evidence of decompensation are dead, 34 per cent of them dying within six months of the first attack of cardiac asthma. Two other clinical signs that are commonly observed in this condition are pulsus alternans and gallop rhythm. The former was found in 34 cases of which 33 are now dead, the latter in 57 of which 54 are dead.

DISORDERS OF THE CARDIAC MECHANISM

Auricular fibrillation occurs rather infrequently with cardiac asthma, this arhythmia having been diagnosed in only 30 of the 250 cases. It may be of significance, however, that none of these patients are alive.

Intraventricular (bundle branch) block was shown by electrocardiogram 31 times among 159 cases electrocardiographed, 27 of these 31 patients having since died. Thirteen patients had partial auriculoventricular block alone and four others had it associated with intraventricular block. Of the former group all were deceased excepting one elderly woman who is now doing very poorly seven years after her first attack of cardiac asthma.

CAUSES OF DEATH

The causes of death for 34 of the additional 60 cases that have died since the first report of this series in 1929 have been obtained mostly from the family physicians either in correspondence or from death certificates. Congestive failure was the cause in 13 cases, cerebral hemorrhage in seven, nephritis in four, and coronary occlusion in three. Two patients died after operation, one consisting of incision and drainage for extensive cellulitis of the legs and the other of laparotomy for intestinal obstruction. Another died of a general infection and four are reported to have died suddenly, one of them in his sleep. There have been 15 postmortem examinations in this follow-up series, nine performed at the Massachusetts General Hospital. The most common findings were those of cardiac enlargement with hypertrophy of the left ventricle and dilatation of all the cardiac cavities. Chronic passive congestion of the liver, spleen, kidneys, and, especially microscopically, of the lungs, and narrowing of the coronary vessels were observed in nearly all cases. Pleural adhesions in varying degrees, up to complete obliteration of the pleural cavities in three cases, were frequent occurrences. It is believed that none of these patients died in an attack of cardiac asthma.

TREATMENT

The treatment in the cases that have since died differed very little from that used in the two other groups of patients to be described (living cases, and additional series of 22 new cases). Diuretics, however, were prescribed less frequently, in the earlier cases.

LIVING CASES OF CARDIAC ASTHMA

Of the twenty cases surviving 10 are males and 10 are females. Their average age is 58 years, the three oldest being 77 years. Two of the three patients under 50 have rheumatic heart disease, one of them being a young man who had his first attack of cardiac asthma followed by a severe hemoptysis nine years and four months ago, which is the longest duration of life for any of those surviving. The average duration from the first attack of cardiac asthma to the present time is 5.5 years for these 20 survivors.

Nine of the 20 patients are doing very poorly, leading a chair and bed existence or curtailing their activity to a minimum. One elderly woman is quite active, but is awakened by severe dyspnea nearly every night. Six patients report that they are free from cardiac asthma at this time. Eleven cases of hypertensive heart disease are in this group, two rheumatic, five coronary, and two luetic. Angina pectoris has coëxisted with cardiac asthma in three cases, all being associated with generalized arteriosclerosis. When the diagnosis of cardiac asthma was made in seven of the 20 patients, varying degrees of congestive failure were found at the time of examination. Five of these seven cases are doing very poorly and the other two did not report their present condition. Elevated

blood pressure is a common finding, the average being 161 systolic and 82 diastolic. This figure is lower than that found in the cases that have since died. Four of the six patients who are having no attacks at present have a blood pressure average which is considerably lower than that for any of the other groups.

The seriousness of the presence of aortic regurgitation noted in the earlier paper is more obvious now, for only two patients with this type of valvular lesion are still living. Mitral stenosis is present in only two of the survivors, as might be expected since it occurs so infrequently with cardiac asthma. Electrocardiograms of the 16 cases so studied out of the group of 20 living cases show left axis deviation in seven, and right axis deviation in one patient (who has rheumatic heart disease). Four patients have various grades of intraventricular block and another has partial auriculoventricular block.

Grading the severity of attacks is rather unsatisfactory because it must necessarily be arbitrary. With the exception of four cases, however, these living patients have suffered from either moderate or mild attacks, sometimes coming every night but never more than once in twenty-four hours. Six patients have had no more than half a dozen attacks since the onset of their cardiac asthma. Of the four who are considered to have had severe attacks, one has luetic heart disease, and another with rheumatic heart disease had a single severe paroxysm followed by hemoptysis; the third case, an elderly woman, is now free of attacks of cardiac asthma, after having had four attacks of cardiac asthma lasting one and a half hours each; whereas the fourth patient has fairly severe though infrequent attacks.

All of these 20 living patients have been taking digitalis, and when congestive failure has been present diuretics have also been given. Various forms of the nitrites have afforded relief in a few instances. Adrenalin has been used in too few cases to form any definite opinion as to its efficacy although it is thought to have given some measure of relief in three instances. For the attacks themselves morphine and the assumption of the upright position have been almost universally successful.

ADDITIONAL GROUP OF 22 NEW CASES OF CARDIAC ASTHMA

A group of 22 cases from private practice has been followed from 1928 until the present time to supplement the larger series. The findings are consistent with the observations made in the larger group of 250 cases. Twelve, or 54 per cent, are dead and ten are still living. Four of the living patients are doing very poorly and all of the others must through necessity limit their activities. The ratio of males to females is slightly over three to one, for in this group there are 17 males and five females. There is not such a great discrepancy between the sexes among the survivors inasmuch as six males and four females are living. Nineteen patients were over 50 years of age; two of the remaining three cases had rheumatic heart disease.

The average duration of time from the first attack of cardiac asthma to the time of death in the 12 fatal cases of this supplementary series was 1.6 years. In the living patients to date it has been 2.3 years. Three patients have died within six months and five others within two years. There were no cases of cardiovascular syphilis among these patients, but there has been a great increase in the proportionate number of cases of the coronary type of heart disease. That this condition in combination with cardiac asthma is a sign of ill omen is evident inasmuch as 10 of the 13 cases have died, four of them within a year. Three of the 10 living patients have rheumatic heart disease. Seven patients had angina pectoris with cardiac asthma, of whom four are dead and three are living.

Evidence of congestive failure has indicated, as before, a poor future, for eight of eleven patients are dead and two of the remaining three are leading a chair and bed existence. Cardiac enlargement was present in all cases. Auricular fibrillation was found in only one patient, who is still living. There were no cases in which the clinical diagnosis of mitral stenosis was made. Two of three patients with aortic regurgitation are now dead. The seriousness of pulsus alternans and gallop rhythm is substantiated by the fact that of eight cases of the former six are dead and of eleven of the latter, eight have died. Two of four cases of intraventricular (bundle branch) block are dead while none of the patients had electrocardiographic evidence of auriculoventricular block.

As to the severity of the paroxysms, it may be said that although the duration of an attack was about the same for the living and for those who have since died, the latter group tended to have more frequent attacks and they were consistently more severe in the case of five patients dying within a year. Of three survivors having attacks classified as severe, one patient is now free of them, another has had but one attack, and the third has had only a few attacks.

Prophylactic measures are being met with varying success in this new group of patients. Although the average duration of life is about the same, in this group only one out of seven died within six months whereas the ratio was one out of four in the larger series. All of the patients have been warned against overexertion, advised to rest in the most suitable surroundings with head elevated when in bed, and have been given constant maintenance doses of digitalis after full digitalization. A few patients find small daily rations of brandy helpful. Diuretics such as theocin and mersalyl (salyrgan) have been prescribed for the slightest evidence of decompensation and have even been given at

intervals with benefit when there has been no sign of congestive failure. In a few instances, a daily injection of 50 cc. of a 25 per cent solution of glucose has been given intravenously, but with little benefit in the present group. In all cases the activity of the patient has been greatly curtailed.

SUMMARY

A series of 250 cases of cardiac asthma has been followed up to the deaths of 230 of them, and a smaller supplementary group of 22 cases has been reviewed. Patients presenting this symptom of organic heart disease are most frequently males over 50 years of age with hypertensive or coronary heart disease. Although exceptions are not uncommon, the average expectancy of life has been found to be little more than 2.0 years, one out of four patients dying within six months. The better the treatment, the longer the life. Rarely a patient may become free of attacks. The prognosis is much more serious when cardiovascular syphilis is the underlying factor or when cardiac asthma is associated with congestive failure, aortic regurgitation, or auricular fibrillation. The presence of pulsus alternans, gallop rhythm, or very severe long attacks likewise make the outlook dubious. Chronic passive congestion and left ventricular hypertrophy were the outstanding findings in 15 postmortem examinations. The most effective treatment of acute attacks of cardiac asthma has consisted of the hypodermic injection of morphine and the assumption of the upright position; these measures have generally been successful. Venesection has been rarely required, but it should be carried out in severe attacks. Hemostasis by the application of tourniquets (blood pressure cuffs preferably) to the four extremities has not been employed in these groups. Diuretics whether or not there have been signs of congestive heart failure have been beneficially added to the usual rest and digitalization prescribed for these patients. The establishment and maintenance of an adequate digitalis effect are of the greatest value in most cases for the prevention of cardiac asthma and the prolongation of life.

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THE HIGH POINTS IN THE RECOMMENDATIONS OF THE COMMITTEE ON THE COSTS OF MEDICAL CARE*

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SCIENCE has acted like a ferment throughout our whole civilization. The changes brought about by it have been so rapid that they are beyond the conception of most of us. We have completely rearranged our environment without any material change in ourselves. The social responses to the effects of science have been slow and the political ones even more so. Modern medicine built on science has been in the forefront in bringing about these changes.

We now find ourselves with a great mass of usable facts with a splendid body of trained men and women ready to apply them for the benefit of humanity, but without an administrative or economic system which will give all members of our society an even or an adequate opportunity to profit by them. In every advance there are always those who struggle against it and those who must fight old enemies in order to be happy. The mould of the human thought machine changes very slowly. The pattern of emotions, prejudices and habits that make up a large part of human behavior is strangely resistant to the control of what we are pleased to call the intellectual processes.

There is no emotion in science. Its control depends upon the keenest and cleanest use of the mental faculties. It is natural that a considerable portion of those dealing with the sick should have their faces turned toward the past and that they should endeavor to use old formulae for new conditions. The automobile and the associated highways have changed all of the time factors in medical practice. The automobile, the operating table, the microscope, the telephone, the test tube, the Roentgen ray, the trained nurse, the interne and the mechanotherapist, are indispensable to the modern doctor. Each has its place and each costs money. We cannot care for the intricate set-up of modern medicine by a bookkeeping system such as that of the past, which was built around the notes carried in the silk hat of the bewhiskered, lovable and friendly general practitioner. We cannot wisely carry forward the fears and the shibboleths of the past in facing the social and economic forces of the day. Issues must be faced and not avoided by repeating the outworn slogans. "Contract practice" and "state medicine" must be redefined and "debogie-ized". Waving scarecrows only disturb the unthinking.

The doctor looks harsh facts in the eye every hour of the day. Conditions compel him now to think in terms of medicine for all and to make plans to provide it along sane lines that will keep the great traditions and ideals of the medical profession at work, instead of distorting them into obstacles to progress.

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Medicine has been built up step by step through persistent experimentation. The social applications of medicine require the same repeated and carefully controlled experiments. We should recognize that the scientific side of medicine is up-to-date and in full synchronization with the peaks of human achievement, while for the most part the social side and the economic side as developed now are often archaic and ineffective in operation.

The medical profession has been undergoing a dramatic transformation in the last twenty-five years. Just as civilization has been remoulding its environment, so medicine has been remoulded by those instrumentalities that are supplementary and accessory to the use of the trained mind and the trained hands of the physician.

In this country we have had the construction of great medical schools and laboratories. We have put hundreds of millions into hospitals. We have trained tens of thousands of nurses and technicians. The mere operation of the machinery of modern medical practice requires great administrative skill and enormous expenditures. The physician can no longer be independent of these great agencies. He can, though, command them and see that they are used for their highest purposes, but in order to do so, he must take part in the business, social and economic reorganization that is required so that these instrumentalities may function and so that he may do his share in seeing that all elements of the population receive a just and fair proportion of medical attention. In order to bring this about, community coördination and some orderly plan that will provide the facilities and that will remunerate the physician and his associates, must be worked out.

Our technical advances are so far beyond our social ones that this will inevitably be difficult, but some of us are optimistic enough to hope that well-planned experiments can be put on their way and that from them we will learn how to perform this important task for society without losing those splendid human relationships between doctor and patient that are so vital in the care of the ill.

The making of experiments is well on its way. In Washington, Oregon and California, leaders in the medical profession are at grips with the details of proposals and definite plans. The doctor must recognize that, whether he likes it or not, something is going to be done. It is better to have it done by him than to him.

You are all familiar with what has taken place in regard to these Veterans' hospitals. You recognize that, with the income tax providing large funds and due to the political pressure, we now have nearly a billion dollars going annually into various forms of veterans' relief. Our Federal Government has the largest and finest set of hospitals anywhere in the world for a particular purpose, and the number of these hospitals is growing. But the men for whom they were built are growing older and before long we will have in this country a great hospital system and only a few old men in those buildings. Then we will really face the question of whether there is something further to be done in the relationship of the Federal Government with the operation of these hospitals for special groups in the population.

We are up against certain forms of State medicine at the moment. We have these problems clearly in front of us to be faced. No one is more fearful of bureaucracy than am I. I have been operating several bureaus in the Government and I know how they function. The more local we can make the conduct of these medical enterprises which have been discussed, the better the results are going to be. Those who know the most about the individual are those near at hand, and, if they can make these decisions, we are almost sure to have them reasonably wise. I fear decisions in this field made too far afield by legislative groups with authority and with funds. But I also fear that that is exactly what will happen if the medical profession fails to go at this job and do it well.

Something definite is going to be done, there isn't any question about that. So we are on our way whether we want to be or not. We have sensed it, I think, first in the Far West. You are conscious of it here. You have dentists working in New York City today, paid for by your welfare funds so that they can have a job. The professions are in difficulty. They have not quite analyzed what these difficulties are. They know their income has been reduced. But if you will study the reports of this Committee and study the various fields of medicine in different parts of the country, you will become conscious that there are forces stirring and decisions are being made all of the time in these various parts of the country. It is to get those decisions to be carried out along certain definite lines and to keep the medical profession, as the one with the greatest responsibility, in a commanding position that the majority report has been prepared.

Now, if we reduce it to its simplest terms, the problem of providing adequate care can be illustrated by a very tangible human situation. Mary Jones is awakened in the night with a pain that may mean appendicitis. The Smiths down the street are expecting a baby. The Italian family around the corner is worried because little Rose has no appetite and seems to be losing her strength and vitality. What are they to do? All of them know in a vague sort of way, perhaps, about the great pool of medical knowledge waiting to be tapped. They know that the doctor down the street has been to New York and has a fine reputation, but they aren't really on friendly terms with him, and besides, they don't know what his charges will be. Perhaps

the corner druggist can fix up some medicine that will do the trick. Then there is the chiropractor up the street. Mrs. Brown goes to him, and he doesn't charge much.

The problem that these families face is crucial. One decision will lead them quickly to scientific medical service; others will cause delay or may completely block their avenue to this pool of knowledge. The problem, therefore, is to devise the kind of an organization which will so far as possible insure that patients quickly reach the proper hands and obtain good service when they get there. Two things are needed: First, a continuing, close personal relation between the medical organization and the consumers of medical service; and secondly, financial arrangements that facilitate prompt attention to the first signs of distress and full use of preventive services.

Now you know that these decisions are being made by the tens of thousands every day throughout the United States. What shall we do? If there is a local set-up that is known, that is sound, that is the one that is going to be called on, then the little girl with a sore throat that really is diphtheria is going to find the place where she belongs right away instead of having several days' delay before there is the diagnosis made and after she has already infected a number of other people in the schoolroom. We must establish contact between the person that has the need and the expert at the earliest possible moment.

The provision of adequate scientific medical service to all the people, rich and poor, at costs which can be reasonably met by them in their respective stations in life, is of vital concern to everyone here in this country, for in every city, town and village of this country are people suffering from rheumatism, cancer, venereal disease, diabetes, tuberculosis, and other ailments. Thousands of persons, even in "good times," try to get along without the medical service they need. Hundreds of thousands postpone seeing the physician or dentist or going to the hospital because they are afraid the charges will be too high. Even among the wealthy it is only a small percentage who obtain all the preventive care that they really need.

This lack of adequate medical service lays a burden of pain, suffering and inefficiency on this nation which, rich as it is, exceeds what it can afford. The question which faces the American people in the next ten years is not whether we can afford to provide ourselves with satisfactory medical service, but rather, whether we can afford to provide less than adequate health care. Two years ago the Committee on the Costs of Medical Care faced this question and decided that it would proceed on the assumption that the objective was adequate medical service to all. It seems to me that the decision was sound and of far-reaching importance.

The Committee, in getting down to its task of devising ways and means, recognized the importance of practical questions; how to use the facilities available, how to take account of the philosophy and temper of the people, and their appreciation or lack of appreciation of medical service, and how far we could go with present and future economic resources.

From the beginning, some of us have stressed that we wanted to build a better system of medical service on existing foundations. Medicine has grown steadily and fruitfully in the last two centuries, and as I have indicated, it has had its most rapid growth in the last two or three decades. Much has been learned that must not be forgotten.

Before presenting the specific recommendations, I think we should emphasize the significance of satisfactory medical service. After a great deal of discussion we agreed that a satisfactory medical service was one which would fully meet the following essentials: first, safeguard the quality of medical care and preserve the essential personal relation between patient and physician, and, secondly, meet the true needs of practically all of the people.

It should provide service on financial terms which the people can and will meet without undue hardship either through individual or collective resources. No one who has examined the data which have been gathered by the Committee can doubt that the cost of medical care often constitutes a serious obstacle to a proper distribution of medical service.

A satisfactory medical program must also utilize known preventive measures. The old saw about "an ounce of prevention" is vitally true in the medical field. If we are to keep the costs of medical care within reason, we must make our major economy through the prevention of disease.

It must assist and guide patients in the selection of competent practitioners and facilities. We haven't dodged that question of the choice of the doctor and the choice of the hospital. In the plan for the medical grouping and the medical center, it is anticipated that there would be enough spread of information about the group and enough interest in it so that a considerable percentage of the population would be able to get contact with dependable medical service whenever they required it. It is a difficult thing to try to arrange any roster of physicians on the basis of their competence. You know, those of you that know human beings, that some people would rather die in the hands of an ignorant practitioner that had good bedside manners than survive in the care of a man who did not happen to please them from a social standpoint. That is something that you have to expect and face in human beings.

As Professor Hamilton has so well pointed out, the art of medicine is intricate and the relation of treatment to results cannot be ap-

praised by a layman. Rarely does the patient have the knowledge necessary to judge quality. The expense and suffering which attend a wrong choice of practitioner and "shopping around" add unnecessarily to the human as well as the monetary costs of care.

Finally, adequate and assured payment must be provided to the individuals who furnish service. Unquestionably many physicians are decidedly underpaid for the work which they do and the heavy responsibilities which they undertake. Furthermore, even some of those who have larger incomes are under a constant strain, due to the precariousness and uncertainty of the future. As a matter of fact, in our plan we have hoped that there could be worked out a system by which the doctor could keep himself up-to-date mentally by going away for study and physically by having adequate vacations.

All of these, then, are essentials to a satisfactory medical program. While they are broad and general in character, there are specific plans that can be worked out to meet practically all of them.

Those of you who have examined the report know that the Committee makes five general basic recommendations and suggests thirty or more specific methods for carrying them into effect. Without going into the details of these, I should like to picture for you the way in which the recommendation regarding group insurance and group payment might well work out.

We assume that whatever is going to be done is going to be upon the basis of existing institutions. We have an enormous capital plant which must be used. Whatever we do must bring that into full play. In some places there is already a grouping which makes it possible to use existing units with comparatively little change. Some combinations of institutions and of men can take place in almost all communities. In the larger communities, such combinations will not be like the great absorbing corporations and take in everything, but there will be a zoning of these medical centers.

When you get right down to the real question, what we are doing here is to adopt the corporate idea to the practice of medicine, and to bring the efficiency and the economy of that idea into medicine and in the organization, control, management, and operation of the accessories of medicine which have become as costly as the actual expenditures for the doctor himself. In any one of these groups we can use in our early experimental period existing personnel and existing means.

In the first place, no one is to make money out of the plant and out of the accessories. They are to be handled as our great volunteer hospitals are, by boards of experts in finance and in administration, who will do this service for the community.

The control of the medical side is to be in the hands of the staff of physicians. They are to work out the professional standards and the procedures as to what shall be done. If the medical profession cannot meet that, then somebody will meet it for them. I think they can, and I think they will meet it. Those of us who have had contact with medical schools and hospitals in an administrative way know that we can discover physicians who have a unique facility and a great skill in administration. They can be found, they can bring together these groups, as do the deans of the medical schools. They can gather the men and study them for their particular abilities and capacities. They can decide what specialties shall be represented and how they shall be handled. We know that these things can be done because they are being done right now in a number of places.

It is true that the full scope of the medical center proposed by the Committee is not in operation as yet, but it is merely an extension of what already is being done.

The advantages to the doctor are obvious. He will get a division of expense for these accessories, not having to take the whole load. He will get greater efficiency, greater opportunities for work, more ease in postgraduate study and in vacations, more coöperation from his friends and neighbors, more education from constant association with others.

We will not inhibit by this process the individual choice of the patient who wants a particular doctor. We think that the patient will secure good medical attention more promptly. We think that with good service available and understood and paid for, there will be less call upon the cultist and upon patent medicine. We think that much of the "shopping around" that is so expensive and wasteful in every direction can be largely obviated.

This is but a natural growth of certain tendencies that we find all about us in this country.

There is no use in group organization on one side unless there is a good financial set-up on the other. The only way that I can see for such a set-up is to take advantage of the great funds that are now in use, the endowments for free beds, the great buildings that have been built, and add to that a form of group payment which need not be excessive, which will cover the requirements of the physicians and others operating these plants. We really do not need to work out any great extension of capital investment. We have enough at the present time to try these experiments out and to do something in most of our communities. The charitable contributions which have been made in the past are of immense significance and have been of the greatest advantage. They give us a stable basis from which to work forward. When we add to them these group payment plans for a division of the load of cost and a sharing of the burden of illness, it seems to me that we can

within a short time go farther than in any other way.

In such a large city as this one can see certain areas grow up in which these centers can be developed and tried out. We have just had an experience recorded here of this Cornell pay clinic and of what it has been able to accomplish. Dr. Hartwell forgot to say how satisfactory that has proved to many of the patients. I have heard comments from them showing that they felt that some great new thing had been done in opening to them an opportunity to get at this medical pool of knowledge.

When we come to the question that was faced by the Committee as to whether these group payments are to take the form of voluntary or compulsory contributions, naturally we meet differences in viewpoint that can only be worked out in time. We felt in the Committee that it was safer to start off with the voluntary method, for we feared that the compulsory method carried out too soon with vigor and enthusiasm of legislative bodies, that might have members who want to be reëlected on a popular cause, might project us into a field from which we might later wish to retreat. But if, after a few years, we have been able to demonstrate that there is a willingness to meet this charge, and that only those fail to meet it who are reluctant or negligent or indigent, then we can see our way toward some plan that may have the compulsory feature in it. In other words, we can develop a plan of compulsory health insurance gradually.

The costs, as brought out by the Committee, are not staggering—$20 to $40 per person per year. Using our present facilities, it is not a great cost when we think of how much many pay now who have more than the ordinary amount of illness to face.

Even though medical centers take over many of the functions now performed by various unrelated agencies, there will continue to be need in cities for community study, coördination and the planning of medical facilities. The Committee recommends the immediate formation of professional organizations with lay participation to start in this work. If the services of such organizations prove useful, permanent coördinating agencies representing the various professional bodies and the public should be organized. We have seen in these great community chests what can be done to bring the various social agencies together for such a purpose as the raising of funds and the division of the responsibility of various kinds of relief among the agencies of a community. That kind of coördination and coöperation is possible in the American community, and it is an American thing to do. It still has in it the spirit of the volunteer.

I need not go into the various possibilities in regard to industry and the methods of dividing the load between the wage earner or the man who hires him, but I can point out that in small cities or towns this can be done using the hospitals as a center and putting the staff of the hospital in such a position that it is available to all reputable practitioners.

We can also arrange so that these smaller units near metropolitan centers can come into contact with the medical centers in the larger areas, can draw upon them for the service of specialists and make other savings such as are possible in any corporate device for the distribution of functions of any agency.

In the rural areas our problem is more difficult. We will probably have to think there in terms of "medical stations" rather than elaborate hospital centers, of places where patients can come and doctors can go and where such facilities as are possible can be provided.

With the present state of agriculture, particularly in the Southern States, it does not seem likely that any adequate form of rural medical care can be carried out without support from the State or elsewhere. There is not enough in the way of resource. In Canada, as you perhaps know from following these reports, payment in rural areas has been worked out so that the doctor is on the tax roll, and I think that that has worked out unusually well among the farmers of Saskatchewan. It seems to be practical, it seems to be worthy of repetition in our own country.

The plan that we have talked about here has a great reach to it. If the organization is sufficiently extensive and well worked out, we can go from the city to the suburbs. In the cities we can have units, in each community, where the doctors and the lay people can get together and develop these centers. We can also have in connection with that these farm units or these rural units so that a man could go from one center to the other by arrangement, and the unit could tell what the charge would be if anyone were sent up to the next agency for further help.

What we really need in working out this problem, is as Dr. Hartwell has said, interest and leadership. Someone must take hold of it. The reason we asked some of you to come here was in the hope that you would sense what the Committee had done and would stimulate those about you to bring about solutions in your own particular neighborhood.

This thing will not go of its own propulsion. Something, as I said, is going to be done. If it is to be steered by those who are best informed and those most interested, we can look forward with confidence to the result, but if its motivation comes from those who have grievances, who have been left out of the picture, who have a claim on this medical pool of knowledge and are

not getting it, then it seems to me that we are going to have what is done, done from the wrong angle, and perhaps in the wrong way. Our appeal, as we approach the public with this study of five years, is that you will listen and study over the facts but above all that you will start to work to see whether we cannot begin, in the various communities, experimentation that will bring about within a short time a test of groups of doctors serving groups of patients on a group payment plan, no one plan, but on a plan which can be watched as an experiment should be and can be judged by the actual results obtained.

We hope, too, that this can be approached without prejudice and preconception, that the doctor will leave to one side the various bogies that have been developed, and approach this problem of social reconstruction for medicine in the same way that he would take up the treatment of an old disease by any new method, that is with eyes open and unafraid, and, above all, examine it with the idea that it offers to the American people the greatest opportunity for happiness that can come to them from any present source.

Think what it would mean if we could give everyone that needs medical attention the kind of service that is possible when he needs it and give it to him on a basis so that he can maintain his dignity and his self-respect. Think what it would mean in happiness if we could get a spread of what medicine can do to all of our people.

It is a worthy object. There is none worthier.

And, in closing, I want to thank the members of the Committee and the research staff for the contributions that they have made in permitting the profession of medicine in the United States, and the associated professions, to do a better job than they have done in the past in the care of our ill.

A NEW METHOD OF ADMINISTERING OXYGEN

A Preliminary Note

BY ALEXANDER M. BURGESS, M.D.,* AND ALEXANDER M. BURGESS, JR.*

DURING the past few years the value of oxygen therapy has become well recognized. At the present time, especially in the relief of the anoxemia of pneumonia and in the treatment of cardiac failure it has taken a very important place in the armamentarium of the internist. The fact that it is not used by the average general practitioner is principally due to the lack of a simple and efficient method of administration which does not involve cumbersome and expensive equipment.

Of the methods that are now in most common clinical use there is none which is satisfactory from the point of view of the private practitioner. The funnel method has long been known to be inefficient and wasteful. The face-mask can give good results so long as it is accurately applied by a trained attendant but is not tolerated at all by many dyspneic and apprehensive patients. The nasal catheter method if properly applied may, according to the work of Wineland and Waters[1], allow the patient to breathe as high as 45 or 50 per cent oxygen without undue irritation but again is not well tolerated by some patients and is positively painful to others. In our experience, however, it is at times very satisfactory. The newer models of oxygen tents may give good results but are expensive and cumbersome and usually less efficient in actual use on ill patients than they are supposed to be according to the makers. Rosenblüth and Block[2] have recently shown that unless a special nurse is constantly on duty to prevent leakage, by keeping the bedclothes well tucked in, the percentage of oxygen within the tent falls constantly below the desired level of 45 per cent even if the rate of delivery of oxygen be raised to 8 or 10 litres per minute, while at 6 litres per minute it rarely exceeds 30 per cent. The oxygen room, undoubtedly the most efficient therapeutic apparatus yet devised, has the obvious disadvantage of great expense and can, even in hospitals in which it has been installed, be available to but a small proportion of the patients who stand in need of this type of therapy.

The plan of administering oxygen herein described had its origin in the "open-cone" method which was suggested to one of us several years ago by Dr. Albert H. Miller, and for two or three years was used routinely on the medical services at the Rhode Island Hospital. This method consists of the careful application over the patient's nose and mouth of an ordinary ether cone, the top of which is left open. A rubber tube from an oxygen tank is led into the cone and pinned to the side so that its open end is about halfway down the cone. Oxygen is then allowed to flow into the cone at a rate of from 3 to 5 litres per minute. By this method *if the cone is kept accurately applied to the patient's face,* a sufficiently high percentage of oxygen is inhaled to give therapeutic results.

Unfortunately it was found that nurses generally could not be relied upon to keep the cone properly applied. The method also has all the disadvantages of the facial mask, to which many patients make great objections.

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The principle, however, which is exemplified by the "open-cone" method seemed to us worthy of further investigation. It is simply that if oxygen, which is somewhat heavier than air, is introduced at a reasonable speed into the bottom of a container which is impermeable as to its walls and floor but open at the top, there will be maintained in the lower part of the container an atmosphere relatively rich in oxygen in spite of free diffusion upward.

Tests were carried out on containers of varying sizes. For this purpose we at first employed paper cartons, such as are used for packing merchandise, because of the ease with which these can be modified as to size and shape. The first used was a box measuring 19¾ in. in length, 17½ in. in width and 14½ in. deep with a cubic capacity of approximately 2.86 cu. ft.

EXPERIMENT I

Oxygen was allowed to flow into this box by two tubes ending about three inches from the floor of the box at opposite ends. The tests were made at room temperature in a quiet room.

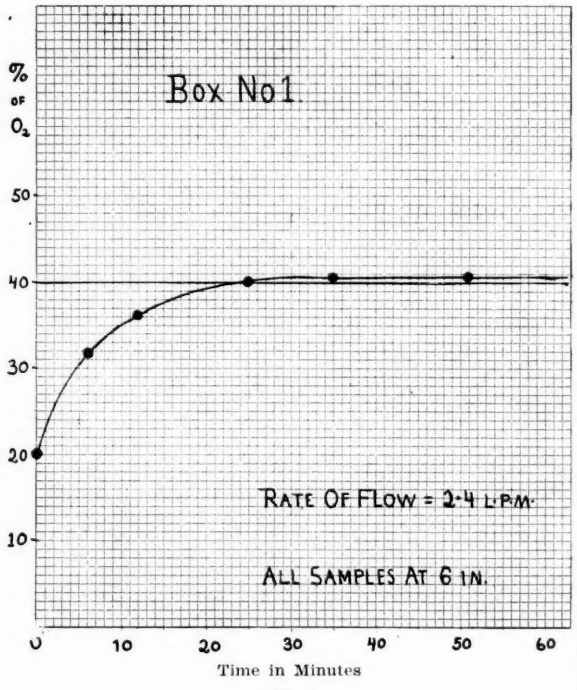

FIG. I.

The accuracy of the flow gauge was carefully checked from time to time by running oxygen into an inverted graduate filled with water and accurately timing the displacement of the water. The percentage of oxygen in the samples examined was determined by the Yandell Henderson syringe method.

In the first test all air samples were taken at a level of approximately six inches above the floor of the box. The result is shown graphically in Figure I.

This shows that at a speed of 2.4 litres per minute the percentage of oxygen at six inches from the floor of the box rose to 40 in twenty-five minutes and reached a constant level at a little above 40.

EXPERIMENT II

Tests were then made at various levels in the box after first allowing a half hour's flow at 2.4 litres per minute to be sure that constant values had been reached. The results are shown in Figure IIA.

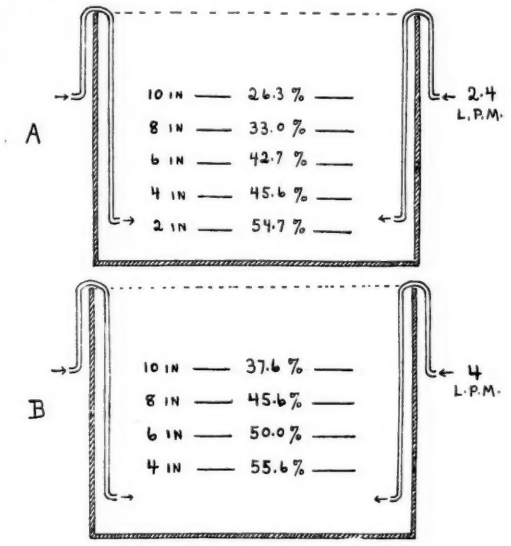

FIG. II.

EXPERIMENT III

Next the effects of raising and lowering the walls of the box with the other conditions remaining the same as in Experiment II was studied as shown in Figure III, A and B.

EXPERIMENT IV

The original box was then used as in Experiment I but with the rate of flow raised to 4 litres per minute, the higher percentage of oxygen obtained being shown in Figure IIB.

Following this, other tests were made using other containers of various sizes. As a result it may be said in general that in a container such as the one described (19¾ x 17¼ x 14½ inches) with the top open and in a room where the air is quiet there is reached, with an inflow of oxygen at 4 litres per minute, a constant concentration of oxygen of approximately 50 per cent at a point six inches above the floor of the box. This oxygen percentage can be increased markedly by raising the rate of flow, and considerably but less strikingly by raising the height of the walls of the box. Conversely, of course, diminishing the rate of flow and lowering the walls of the box both cause a corresponding diminution of the percentage of oxygen. It was found also, as would be expected,

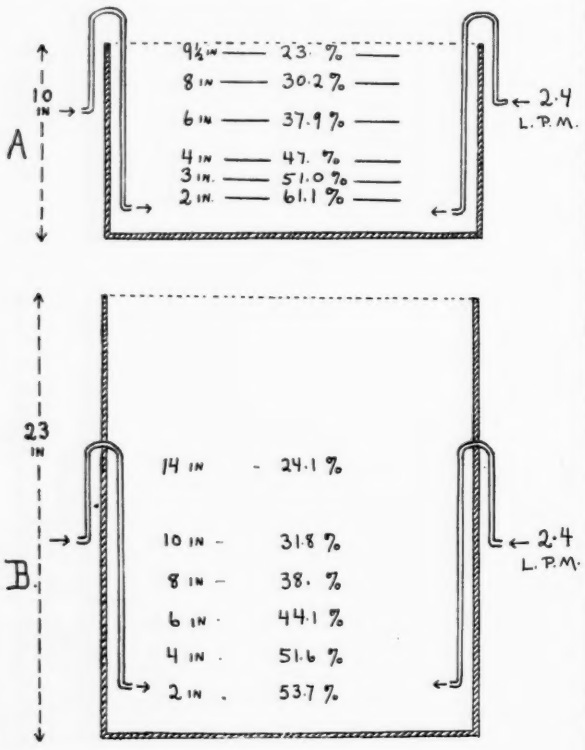

FIG. III.

that partially closing the top of the box causes a slight increase in the percentage of oxygen at the test point (six inches above the floor of the box). Although the oxygen in expanding from the cylinder loses heat and flows into the box at a temperature somewhat below that of the air of the room, there was a difference of not more than two degrees Fahrenheit between the temperature in the box at the end of the experiments and room temperature.

Tests with other containers showed that with smaller and deeper containers higher figures are obtained and with larger containers, lower figures. For example, a container measuring 20½ x 26 x 18¼ inches in depth (capacity approximately 5½ cu. ft.) gave a constant percentage of approximately 44 at the six inch level, while with one measuring 19½ x 13¾ x 18½ inches in depth (capacity approximately 2.87 cu. ft.) a percentage of over 75 was obtained. It is interesting to note that this container has almost exactly the same cubic capacity as box No. 1.

Having ascertained that it is easily possible to maintain an atmosphere sufficiently rich in oxygen to be of therapeutic value, at a moderate rate of oxygen flow, in boxes big enough to contain a patient's head on a pillow, the next problem was to test a box fitted to a living subject. By cutting a large window in the side of box

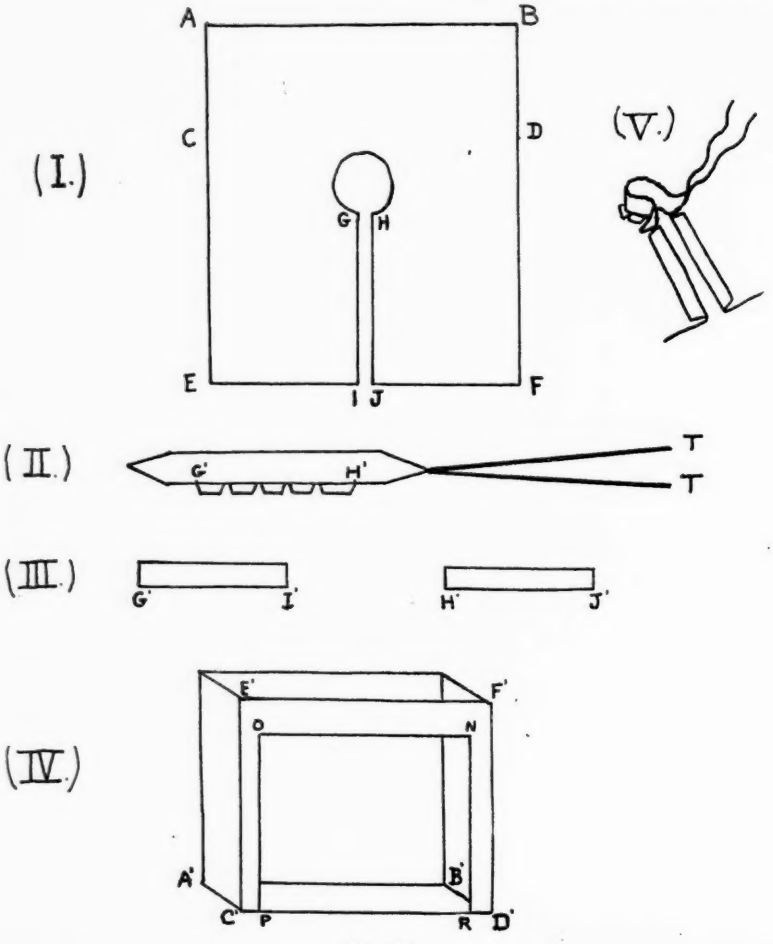

FIG. IV.

No. 1 and using a curtain of rubberized cloth to cover the aperture and tuck about the subject's neck, it was found that the concentration of oxygen at the level of the patient's nose when he lay on his back averaged about 45 per cent at a flow of 4 litres per minute, providing the subject lay perfectly quiet. It was quite evident, however, that even moderate restlessness would destroy the efficiency of the apparatus as even slight leaks cause a rapid fall in the percentage of oxygen.

The next step, therefore, was to devise a curtain which should be so far as possible "wiggle-proof". For this purpose a curtain was made and fitted to the apparatus according to the following diagram.

EXPLANATION OF DIAGRAM. (FIGURE IV)

A rectangular piece of rubberized cloth* whose width A-B is about four inches greater than the length of the box A′-B′ is cut as in (I) with the removal of a circular piece whose circumference G-H is about 12½ in. A collar (II) is stitched to it, as indicated in (V), so that the line G′-H′ is applied to the line G-H leaving tapering ends, to one of which two tapes (T) are attached. Extra flaps, III (1) and (2), are stitched with G′-I′ and H′-J′ applied to G-I and H-J respectively. The curtain, thus prepared, is attached to the box by fastening the edge A-B along the line A′-B′ inside the box with the side to which the collar is attached uppermost, the edge A-C and B-D along A′-C′ and B′-D′ respectively and C-E and D-F along C′-E′ and D′-F′ in a similar manner. The edges E-I and F-J should be fastened along E′-F′ inside the box but only about halfway to the center. The whole curtain should be large enough to allow considerable slack so that the patient when in position may turn from side to side without drawing it taut. It may well be fastened to the box by light wooden strips and this may be reënforced by adhesive tape to prevent minute leakage. The box (IV) may be made of any material impervious to oxygen. We have been using one made of heavy cardboard ("wall board") with large windows of cellulose acetate in the sides and rear wall. The floor is made of light canvas not stretched tightly. The opening P-O-N-R should be large enough to allow the patient some freedom of motion. The dimensions of the box which we have in use are as follows: (E′-F′) 19½ inches; width (A′-C′) 13¾ inches; and depth (F′ D′) 18½ inches.

In use, a small and thin pillow which fits the bottom of the box is placed in it and the patient's head is introduced and the collar fastened about his neck by tying the tapes not too tightly. The two flaps, III (1) and (2), are then placed together and folded over each other twice and secured by wire paper clips or clamps. This makes the aperture through which the patient's head projects into the box quite impervious, except for a minimum of leakage inside the collar, whether the patient is quiet or restless. In using the box in case of an infant or small child the collar may be secured about the abdomen instead of about the neck.

A very small infant can better be placed entire in a somewhat larger box. For this purpose we have used a box 28 inches long, 18 inches wide and 18 inches high, made without windows. A box of this size will fit an average bed pillow which can be used as a mattress. As the patient is entirely within the box and no curtains are used, leakage cannot occur. Preliminary tests of this box, without a patient, showed that at a rate of oxygen flow of 4 litres per minute the concentration of oxygen at the six inch level was over 70 per cent. This box so far has been used on one patient, an infant less than two weeks old, who showed spina bifida and a moderate but persistent cyanosis. The flow was started at 5 litres per minute but in 20 minutes the concentration of oxygen at the level of the patient's nose rose to 71%. The flow was therefore immediately decreased. After 10 minutes at 4 litres per minute a value of 69 per cent was obtained. The flow was then decreased to 3 litres per minute and after ten minutes a reading of 55 per cent was recorded. When, however, the flow was decreased to 2.5 litres the percentages obtained were 27.3, 25.1

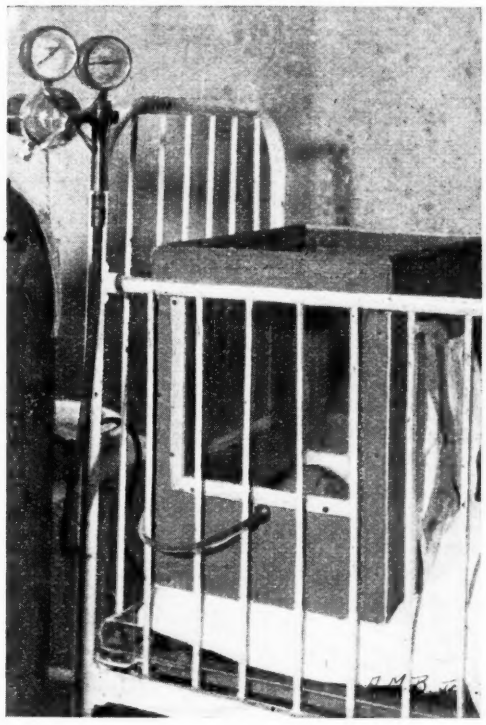

FIG. V.
Box in use. Patient with bilateral lobar pneumonia.

*The cloth which we used is treated to make it impervious but is, strictly speaking, not "rubberized."

and 21.9 during the next two hours. It was found, however, that raising the flow to 3 litres per minutes once more gave a prompt return to an average of 42 per cent.

The smaller box with the curtain has thus far been used on one adult and one child of one and a half years of age. The latter was suffering from a bilateral lobar pneumonia and

FIG. VI.
Box in use. Nurse carrying out treatment.

was transferred from a small oxygen tent to the box. It was found that a flow of 4½ litres per minute was required to keep the percentage of oxygen in the neighborhood of 50 per cent and that lower figures were obtained after the baby had been fed or otherwise disturbed than after she had remained quiet. The box was much more satisfactory than the tent from a nursing standpoint as the baby could be fed, treatment given and the diapers changed without disturbing the apparatus or interrupting the flow. It was used in very hot weather without an adequate cooling of the oxygen, and the temperature within the box averaged only four degrees above room temperature. This was not so great a difference as had been noted when the tent was used.

In using the box on the adult patient we found that a flow of between five and six litres per minute was necessary to give an adequate percentage of oxygen (40 to 50 per cent). Passing the oxygen through cracked ice prevented the temperature in the box from rising above room temperature. It is apparent that, in any given case, a few tests should be made to determine the optimum rate of flow.

Thus far we have not made any investigation on CO_2 values. Furthermore, temperature and humidity must be studied and methods devised for the better control of these factors.

All that it is possible to say at present is that, by the use of open boxes of the type described, patients can be made to breathe a sufficient concentration of oxygen to be therapeutically valuable when the rate of flow of the oxygen is from three to six litres per minute or well within the limits allowable for use with oxygen tents. Although our efforts thus far to use this method clinically are still experimental and crude, we believe that we have shown that the principle upon which they are based is sound and that simple apparatus such as we have described can be perfected and modified to meet the needs of a large proportion of patients requiring oxygen therapy.

ACKNOWLEDGMENT:—Our thanks are due to Dr. Albert H. Miller of Providence for helpful suggestions and to Dr. Kenneth G. Burton of the Rhode Island Hospital for aid in carrying out the clinical tests.

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COMPLICATIONS OF PREGNANCY AS THEY AFFECT THE MATERNAL NERVOUS SYSTEM AND THE BONY PELVIS*

BY CHARLES J. KICKHAM, M.D.†

IT is my purpose tonight to outline, in a brief way, certain complications of the parturient state that particularly affect the maternal nervous system and injuries to the bony pelvis. It is realized that many points are either not touched upon at all or are touched upon superficially, but it is hoped that the paper will at least bring forth discussion of some points mentioned.

Psychosis is one of these complications which fortunately is uncommon. This condition may occur at any time in the pregnant period and may be transient or permanent and varies in intensity and type. Basically, there is almost certainly a predisposition to nervous instability, or a bad family history in the etiology of this complication. With strain of pregnancy, the nervous system breaks and an insane at-

*Read before the Mercy Hospital Association, Springfield, Mass., May 19, 1932.

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tack may be precipitated. During the antepartum period it is felt that toxemia may play a great part, and in the postpartum, sepsis may initiate an attack. In the latter event, we must carefully distinguish between a true psychosis and delirium incident to our not uncommon fever. The vast majority of cases are mild and transient but sometimes they are of the depressive, suicidal, or infanticidal type, and thus are more serious. When symptoms of mental aberration are present either alone or in conjunction with fever, it is well to consult with a psychiatrist and treat the abnormal mental condition under his directions. We see so many cases of mild nervous exhaustion during the parturient period that, unless one keeps in mind the possibility that more serious mental states may accompany this period, an injustice to the patient may be done by lack of early and expert mental care. The writer has had two cases of this group; the first had pronounced delusions for about two weeks, postpartum, necessitating constant supervision. Gradually her mental health returned though not for several months. The second case began to show signs of mild abnormal mentality when about six months pregnant. This was shown by depressions and phobias. It was hoped that after the birth of the baby these would clear up, but now, after several years these mental symptoms persist. It is of interest that in neither of these cases was there any family history of unstable mentality, though both patients were what might be called of a "temperamental" nature. Psychiatrists tell me that mild mental aberrations are much more common than usually believed, and that many such patients remain permanently affected.

Polyneuritis, affecting various tissues of the pregnant woman, is very common, and these superficial discomforts, such as numbness and prickly sensations are very difficult to relieve. Kornhoff, many years ago, noted the syndrome which now bears his name. His investigation showed that a combination of polyneuritis and delusions was not uncommon in a patient with a weak nervous system, and was precipitated by toxemias, sepsis or nervous shocks.

Chorea is still another complication, and young women in a first pregnancy are predisposed according to Whitmore[1], and the symptoms usually appear in the first three months; mild cases are most frequent but serious and grave types are not rare. Some writers feel that they are caused by toxemic conditions, and base their opinions on the fact that the cases recover promptly after termination of the pregnancy. Prognosis in the case depends upon the severity of the attack, but undoubtedly even in mild cases the patient is worn both mentally and physically by the constant muscular twitching. Statistics show that mortality in these cases is high for the baby and serious for the mother. It is of note that there does not seem to be a greater disposition to abort in these cases than under normal conditions. Treatment is unsatisfactory and along standard medical lines with the additional effort to eliminate toxic absorption. In selected cases, after the age of viability, termination of pregnancy may be indicated.

Hemiplegias are not uncommon in the interpartum and postpartum periods, and are usually due to embolism or thrombophlebitis. The onset may be sudden or gradual; in the latter group we sometimes get suggestive symptoms of sluggish mentality, aphasia, headache or vertigo. The vast majority of central nervous disturbances are complicated by pelvic or femoral phlebitis with the usual symptoms indicative of these conditions, but not rarely they come out of a clear sky with no demonstrable etiologic lesion. Endocarditis or any area from which an embolus or bacteria may reach the brain may be the original site of entrance into the circulation. I mentioned bacteria because I find that it has been shown that bacteria may be carried by the arterial circulation into the brain, setting up a thrombophlebitis, with resultant hemiplegia. The severity of the paralysis varies as does its duration, but fortunately the majority are not permanently invalidated. When caused by septic emboli, the prognosis is particularly grave. Treatment primarily is prophylactic. When phlebitis of any type is suspected, complete physical rest with a minimum of handling or examination is indicated. The same applies to endocardial cases. In routine postpartum non-septic cases more exercise such as moving around in bed or sitting up, or as the Germans advise, calisthenics of a mild type, may keep the circulatory system in better tone, and prevent sluggishness of blood flow, and thus minimize the tendency to thrombus formation. If hemiplegic paralysis is more than transitory, orthopedic therapy should be instituted early to reëstablish muscle function if possible. Paraplegias are rare and probably not of central origin, but due to pelvic nerve injury as will be shown later.

"Injuries to specific nerves or nerve trunks are probably more common than we appreciate, because many such injuries are mild in character and go undiagnosed, and many are not reported so that we may get a false idea of their frequency. The vast majority of nerve injuries affect the peroneal nerve, tibial, crural and sciatic, which facts imply also injury to the plexus from which they arise. In an excellent paper by Oskar Lindin[2] published in 1927 we get a wealth of knowledge on this whole subject. A brief review of the anatomy will show that the explanation given by Hunermann is satisfactory. The latter says that the peroneal nerve is so often affected because the ischial plexus lies in front of the pyriformis muscle and that the three sacral roots of this plexus run along the front of the muscle and have a soft bed which

protects them from injury, but the upper root, the lumbosacral cord, has the fourth and fifth lumbar nerves running unprotected across the sharp innominate line. At this spot it is liable to pressure in all deliveries. Lefebvre, quoted by Lindin, has shown that the main portion of the peroneal nerve is a continuation of the lumbosacral cord; thus injuries to the latter affect the peroneal. This is an important contribution because at times with distinct peroneal paralysis the question arises as to where the injury took place. Was it from the leg straps or local injury where the peroneal nerve winds around the head of the fibula or from higher up in the pelvis? Usually we get a unilateral paralysis of this type and this is probably because only one oblique diameter of the pelvis is occupied by the presenting part, and thus pressure is exerted on only one nerve trunk. Many observers feel that peroneal nerve injury is always accompanied by an involvement of other nerves of this plexus, but are either overlooked or so slight in character as to be masked by the more definite involvement of muscles supplied by the peroneal nerve. Double-sided paralysis does take place, but in the cases so recorded in the literature they are where multiple forceps applications have been made with shifting positions of the child's head and thus more than one point of pressure or possibly from the tips of forceps blades injuring both nerve trunks. The peroneal nerve also derives branches from the first and second sacral and this accounts for the involvement at times of these nerves. The sciatic nerve may be injured in obstetrical manipulations and give rise to symptoms in areas supplied directly or through its main branches, the internal or external popliteal. The posterior tibial arises from the internal popliteal, but some observers have shown that this portion gets branches from the lumbosacral cord. The symptoms of nerve pressure may arise acutely or be very slow; they may be severe or mild. Frequently, before a patient goes into labor some symptoms are present such as paresthesia of skin or muscle twitching. Frequently as the patient is in labor she will complain of pain along the course of the sciatic nerve or its branches. Such symptoms are of importance for, if pressure is continued on nerve tissue or aggravated by forcible delivery, permanent damage may be done. H. Rummel[3], in reporting two cases of nerve injury which gave symptoms prior to delivery, makes the observation that such conditions are indications for cesarean section to relieve the pressure on nerve tissue. While the majority of paralysis cases follow instrumental delivery, it is the opinion of many that these cases were probably only aggravated by the forceps delivery; that back of it was an abnormal pelvis or large baby with pressure on nerve or plexus, and the reason we find such a large proportion following forceps delivery is because they would be difficult cases in any event. A flat pelvis is less liable to nerve injury because it is wide laterally, while generally contracted pelves or the funnel type are particularly prone to such injury. In this regard H. Nerson[4], in reporting a case of right sciatic paralysis following spontaneous delivery, voices my own opinion; that it is not a matter of size or shape of the pelvis but as in all obstetrical problems, we have in the individual a disproportion between the passage and the passenger, and if so, we may get nerve injury or any other obstetrical disaster.

As stated above, the onset of symptoms varies but in most cases there is a fairly slow development of paralysis over a few days. In the average case we get progressive symptoms somewhat similar to a case reported by Schulz[5], where the patient felt some pain in the right leg before the application of forceps and after recovering from the anesthetic complained of pain on any movement of the right leg with a prickly sensation below the knee. On the second day the big toe was paralyzed and severe pains appeared from the calf down to the toes. On the third day the whole leg was paralyzed. On the twenty-fifth day postpartum, mobility was reëstablished. In a personal case the patient had a difficult forceps delivery and on the third day complained of numbness in the lower leg and toes; gradually toe drop appeared, and the patient was examined by an orthopedic surgeon, who diagnosed peroneal nerve injury. Despite constant orthopedic care the toe drop persisted for several months, and when the patient was last seen, though much improved, there was still some paralysis.

So far, we have spoken of nerve trauma, but we also get paralysis in varied degrees from inflammatory exudate. Particularly does this condition cause mild but aggravating symptoms of pain and numbness over the nerves involved. This type of neuralgia, when accompanied by temperature or chills, should make one suspicious either of intense toxic absorption or pelvic septic exudate, sufficiently large to compress nerve fibres. The prognosis in this group is usually good, but it must be kept in mind that postinflammatory adhesions or scar tissues may cause pressure for many months or even permanently. In the traumatic group fortunately the vast majority has a good prognosis, but here again the individual case must be judged by the amount of damage as shown by expert neurological reactions and examinations.

In treatment the first and vital point is naturally prophylactic. Suggestive preoperative symptoms of nerve pressure must not be ignored; at delivery there must be careful examination with a view to determining the proportion between the pelvis and the child and the position of the child, thus weighing chances of injury to mother or baby because of mechanical difficul-

ties. Careful application of forceps particularly with reference to impinging on soft parts and then careful traction without too much twisting of blades is necessary. The writer has always been fearful of Scanzoni rotation because of danger to soft tissues, though he cannot say that he has ever seen a nerve injury from this type of delivery.

Spinal cord disease such as transverse myelitis is always of interest and in a paper by Heinz[6] this condition is discussed fully. Usually it is of toxic origin and because of this we find that the prognosis depends on the intensity of the toxemia. Heinz quotes Gueissez as finding that of five cases of sudden onset four died, while of seven with slow onset, all lived. Good[7] has reported a case at the Boston City Hospital where there was a traumatic injury to the cord with complete paralysis below the site of injury. The interesting and important thing in these spinal cord cases is that there is no interference with normal uterine contractions and delivery, showing that the uterine contractions are presided over by the sympathetic nervous system, and not the cord.

To summarize the above, one should always remember that certain nerve diseases and injuries may accompany pregnancy, and that minor, suggestive symptoms should be given their proper evaluation, and thus possibly forestall more serious complications; that definite nerve paralysis of various degrees takes place usually in disproportion cases with instrumental delivery, but they are also seen in normal deliveries; and that pelvic cellulitis may cause nerve disturbance which is difficult to relieve and is aggravating while present.

Relaxation or injuries to the bones of the pelvic girdle are not rare, and as remarked in the first part of this paper in relation to nervous conditions, probably are more common than a review of the literature would suggest.

Skajaa[8] found painful relaxation of the symphysis and sacroiliac joints in 31 of 185 patients examined. Thirty years ago De Lee[9] showed that the condition of patients with "waddle walk", neuralgic pains in pelvic girdle and limbs, could be ascribed to relaxation of the sacroiliac, and symphysis, and he showed that this condition is common in pregnant animals. Davis[10] in his book on "Complications of Pregnancy" says, "Pubic bones may become so mobile as to cause patients great inconvenience; with multiparae this can be traced to difficult previous labors. General wasting of tissues or relaxation predisposes to this condition." Putschar[11] made a histological study of 60 symphyses at various ages, and showed that definite changes occur during pregnancy tending to eliminate the cartilaginous disc and that true joint formation resulted. This changed the rigid pelvic ring into one of greater motility in which both halves could carry on independent motion. De Lee[12] feels that the Walcher position depends on relaxation of these joints. The opinions quoted above simply confirm our day to day observation that the pelvis in pregnancy is more flexible than in the unmarried or male. Usually, the pubic joint is the one most affected and when tenderness is complained of in this or in the sacro-iliac region a tight binder or strapping may give relief. It is difficult with the protuberant abdomen to do much in the way of strapping, but at least we can make the effort and not dismiss the patient as a neurasthenic.

The most common serious injury is rupture or separation of the symphysis. DeLee[13] feels that this can only occur where there is weakness of this joint, such as in rickets, since he found that the pelvic girdle will resist the pressure of 400 to 2699 lbs. which is more than would be exerted by any obstetrical operation. Spontaneous ruptures may take place and Shordania[14], reporting in 1929, said that to date 150 cases of ruptured symphyses were reported in the journals and of these 20, or 13 per cent, were spontaneous. Telfair[15] in 1922 reported three cases in one year at the Fordham Hospital and says that the usual percentage is about one case in 10,000 deliveries. In the majority of cases forceps have been used and undoubtedly the added strain of mechanical force precipitates many ruptures. A narrow arch or funnel pelvis will predispose as well as traction upward too soon, and thus bring to bear undue pressure on the arch. Again, any great disproportion between the outlet and baby will naturally require more force at delivery and thus exert greater stress on the pubic articulation. Back of this it seems reasonable to agree with De Lee, however, that some organic weakness must be present in the joint. Huxley[16] reports a case where complete separation occurred three days after delivery but feels in this case that separation had taken place at the time of delivery, and was completed at the end of three days when the patient made a sudden movement in bed.

In the cases of sudden onset with symptoms are usually a loud, cracking sound, during a labor pain or on traction with forceps and followed with definite ease of delivery which is the result of enlargement of the pelvic outlet by the separation. Many cases will be called to our attention first because of constant pain in the region of the pubes and sometimes ecchymosis in this locality; other cases will show bladder symptoms as in the rupture of the symphysis the attachments of the bladder may be injured with referable discomfort in this organ. While not a common complication we may get sepsis in the injured joint which may become serious by dissecting backward into deeper pelvic tissues.

It is a question with some observers if this

can be a separation of the pubes without coincident injury to the sacro-iliac joint. From a clinical point of view you almost always get some symptoms referable to this latter joint, when the symphysis is separated.

Fractures of the rami are very rare, but Walker[17] in 1927 reported a case of separation of the symphysis with fracture of the ascending ramus with a normal delivery; this fracture from the history probably took place after a fall, about a week before delivery. One of the interesting things about this case is that, assuming the fracture took place so far ahead, so few symptoms were found until after delivery.

Separation of the sacro-iliac joint alone is thought to be very rare, though in conjunction with separation of the pubes it is not so rare. The symptoms, other than direct points of tenderness over joints affected, may be very confusing and simulate nerve injuries. These cases often seem to have paralysis and the more suggestive neuralgic pains of nerve injuries. Careful examination will usually make certain the diagnosis and if in doubt, nerve reactions and x-ray will help materially.

When these bony injuries are accompanied by fever, and nerve symptoms, we may have to differentiate fractures and, as Walker[17] suggests —(1) acute sepsis, (2) pelvic inflammation with exudate, (3) acute toxic neuritis, (4) myelitis and (5) cystitis.

The prognosis in pelvic girdle fractures is usually good though it may take weeks to restore function, but if the fracture is complicated by badly damaged soft parts, hematomas, or sepsis, then it may be very serious and even fatal.

The treatment of the fractures or separations consists of rest and apposition of the parts. It is well to place these cases under expert orthopedic care, if for no other reason than to protect oneself against criticism in case of prolonged convalescence. In any event, immobility of the pelvis by tight strapping and rest on a Bradford frame if possible will usually suffice. Do not try to hurry the case; unless firm union takes place after separation of the symphysis or sacro-iliac joints, there will be interference with locomotion as well as pain, the latter very fatiguing to the patient. If spontaneous healing fails, if deemed advisable, some operative procedure may give better results. The writer will here report one case of rupture of the symphysis. The patient was a primipara and the head had descended to the floor of the perineum. I was called in to deliver the case and applied simple low forceps. At the time of the examination the pelvic outlet appeared perfectly normal. As is my custom, my first traction was gentle to test application of forceps blade, and on the second traction which was not forcible, a loud, pistol-like sound was heard by all the attendants in the operating room. The baby was delivered with ease, and examination showed a separation of the pubes of three inches. No other injury was noted, either to the bones or the soft parts. The patient was immediately strapped with a wide adhesive belt and placed on a hard bed. She never complained of any pain or discomfort and was sent home in an ambulance at the end of two weeks. After getting home the patient complained of considerable bladder disturbance, but this gradually cleared up and complete recovery followed at the end of six weeks.

Coccygeal injuries are about the most common of pelvic bone fractures and this is what one would expect, when we consider that while this bone has some mobility, it cannot always stand the strain which is so frequently forced on it by large babies or operative deliveries. As the pubic arch is less prone to give way under stress the force is radiated backward against the less resistant coccyx and fractures result. In the average case these fractures go unrecognized, as any pain in this region complained of is ascribed either to injury to perineal soft parts, sutures, or hemorrhoids, and as a result, while the patient is prone, ankylosis is taking place in an abnormal position. When the patient eventually sits up and brings to bear the weight of her body on the coccyx, great pain or very severe discomfort ensues. Palpation, when symptoms are first complained of, will usually clear up the diagnosis and proper treatment may help to heal the fracture in good position and prevent later pain. Assuming that the diagnosis is not made until too late to prevent ankylosis in an abnormal position, operative treatment may help; but I think the orthopedic surgeons will agree that the results are discouraging. Thus, we must take cognizance of these suggestive coccygeal symptoms, otherwise a neurotic woman may result from unrelieved discomfort whenever she sits for any length of time on a bone which seems to strike every possible protrusion on chair or cushion.

To summarize this latter portion of my essay, may I suggest that we always keep in mind the possibility of bone injuries and more particularly when with forceps deliveries we have a tendency to pull upward toward the pubes too soon. We should also keep in mind that the coccyx is a very vulnerable joint. Given pains or suggestive symptoms referable to the pelvic girdle, examine the patient closely, and thus an earlier and more certain diagnosis may be made. In the care of pregnant patients we should keep in mind the frequency with which there is pelvic relaxation, with indefinite neuralgias, and give these patients the maximum comfort possible by early and efficient treatment of these conditions.

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COMPARISON OF DISEASE INCIDENCE IN CONNECTICUT WITH 1931 AND SEVEN YEAR AVERAGE

MONTH ENDING NOVEMBER 11, 1932

Diseases	1932 Week ending Oct. 22	1932 Week ending Oct. 29	1932 Week ending Nov. 5	1932 Week ending Nov. 11	Average cases reported for week corresponding to Nov. 11 for past seven years	1931 Week ending Oct. 24	1931 Week ending Oct. 31	1931 Week ending Nov. 7	1931 Week ending Nov. 14
Cerebrospinal Men.	—	2	—	—	—	1	1	—	—
Chicken Pox	22	52	76	50	89	9	17	32	29
Diphtheria	1	5	6	5	21	4	5	5	6
Dysentery Bacillary	—	—	—	—	—	1	2	6	—
Encephalitis Epid.	—	—	—	1	1	—	—	—	—
German Measles	—	—	—	—	2	—	—	3	2
Influenza	2	2	—	—	4	4	3	4	—
Malaria	—	—	1	—	—	—	—	—	—
Measles	7	10	2	10	43	8	9	12	26
Mumps	79	41	77	53	28	12	8	31	20
Paratyphoid Fever	—	—	—	—	—	1	1	1	1
Pneumonia (Broncho)	28	23	24	21	17	20	6	18	28
Pneumonia (Lobar)	26	20	18	17	25	23	15	20	26
Poliomyelitis	—	2	—	—	7	39	12	17	9
Scarlet Fever	32	26	54	50	43	30	38	27	35
Septic Sore Throat	1	—	—	2	2	—	5	—	1
Tetanus	—	1	—	—	—	1	—	—	—
Trichinosis	—	—	—	—	—	—	—	—	1
Tuberculosis (Pul.)	26	20	31	11	24	28	30	33	16
Tuberculosis (O. F.)	6	—	3	1	2	—	2	2	3
Typhoid Fever	—	—	4	1	3	7	2	4	4
Undulant Fever	—	—	1	1	—	—	—	—	1
Whooping Cough	66	56	88	40	51	76	47	46	30
Gonorrhea	32	32	27	20	38	22	26	23	65
Syphilis	39	53	43	26	41	45	53	23	43

Remarks: No cases of Asiatic cholera, glanders, plague, or yellow fever during the past seven years.

MEDICAL PROGRESS

PROGRESS IN LARYNGOLOGY

BY LE ROY A. SCHALL, M.D.*

INTRODUCTION

PROGRESS in medicine is a relative term—what may be considered progress today might be proved a false premise tomorrow. Progress, too, is not a steady advance; it consists of waves of attacks and retreats until the final objective is reached.

This paper is the result of the review of many articles on laryngology. It is not perfect; many papers have, undoubtedly, appeared that deserve mention; perhaps I have included some that should have been omitted.

BACTERIOLOGY

Undulant fever is now a well-established disease of man, but much information is wanting concerning its diagnosis, modes of infection, pathology and treatment. Soon after Brucella abortus was discovered in raw milk, it was observed that the calves artificially fed with infected milk developed infected lymph nodes draining the mouth and the pharynx. This observation on calves suggested a further study of diseased tonsils from man. Fifty-five pairs of tonsils were examined by Carpenter and Boak[1]. The technique used by the authors was that after surgical removal each tonsil was placed in a closed sterile jar and brought to the laboratory, where it was transferred with a sterile pair of forceps to a sterile petri dish and described. Cultures were made after the surface of the tonsil had been seared with a hot spatula. Bits of the tissue or any purulent exudate were transferred to an infusion agar to which sterile horse serum had been added. The tubes were then placed in a jar in which 15% of the air had been replaced with 10% carbon dioxide and incubated at 37°C for 4-5 days. After 48 hours' incubation, abortus-like colonies were fished from the growth on the agar slants and replated. Final identification was made by the agglutination and the agglutin absorption tests.

The remainder of the tonsil was ground in a sterile mortar with 5 cc. of sterile physiologic solution of sodium chloride, which made a very heavy extract. A guinea-pig was injected subcutaneously with 1 cc. of the extract. The guinea-pig was killed and examined for evidence of Brucella abortus infection, from five to six weeks after injection. An agglutination test was made on the guinea-pig's serum for abortus agglutinins. The tissues were examined for lesions of the disease and cultures made from the spleen and liver, as well as from other organs when they showed suggestive evidence of the infection. Cultures were identified as Brucella abortus by the same methods as heretofore mentioned. The results of these examinations revealed Brucella abortus in either one or both tonsils from eight of fifty-six patients. In three patients, Brucella abortus was recovered from both tonsils, while in the other five it was obtained from only one.

Pilot and Davis[2] state that tonsillectomy in carriers of Streptococcus epidemicus causes complete and rapid disappearance of this organism from the throat. Persons presenting sporadic septic sore throat, otitis media and mastoiditis often become carriers of S. epidemicus in tonsillar crypts. S. epidemicus may cause acute infection in tonsillectomized persons, but the organisms rapidly disappear during convalescence. It was found in the crypts of 13.8 per cent of 506 pairs of extirpated tonsils. All of the patients gave a history of sore throat. Many whose tonsils revealed S. epidemicus had cervical adenitis, arthritis or arthritic pains. The removal of the tonsils in these patients resulted in marked clinical improvement.

Glover and Griffith[3] believe that the following tentative suggestions are justified in view of all the available evidence: 1. Epidemic tonsillitis is one of the most common causes of invalidity in boarding schools and is due to infection with hemolytic streptococci of the Streptococcus pyogenes group. 2. Infection of the throat with hemolytic streptococci produces varying clinical pictures in different persons. These include the following: first, a symptomless infection, or healthy carrier state; secondly, tonsillitis; thirdly, febricula, feverish catarrh or pharyngitis, without noticeable sore throat; fourthly, scarlet fever. Any of the latter three conditions may be followed by otitis media or by acute rheumatism. 3. Many serologic types of hemolytic streptococci may cause scarlet fever, but certain types, the four "chief" types predominate. Types 1, 2, 3 and 4 are together responsible for 70 per cent of the cases of scarlet fever admitted to fever hospitals in England, the remaining 30 per cent being caused by strains forming a group of heterogeneous types. 4. Epidemic tonsillitis without rash is generally attributable to strains belonging to the heterogeneous group. These strains cause scarlatina when their toxigenic powers are sufficiently high to overcome the antitoxic immunity of the person attacked. 5. Observations made on two outbreaks of tonsillitis (only one of which has been

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described) attended with severe complications but without typical scarlatina rashes suggest that the two chief types concerned, types 1 and 2, may not invariably be of high toxigenicity. 6. In any epidemic of scarlet fever, cases of tonsillitis and mild pharyngitis occur side by side with the cases of scarlet fever, and, if bacteriologic examination is made, a number of healthy carriers will also be detected, all yielding the same type of hemolytic streptococcus as the scarlatinal cases. These unsuspected sources of infection constitute one of the most difficult problems in the control of scarlet fever. 7. Epidemics of tonsillitis in schools are generally associated with a high carrier rate of hemolytic streptococci. 8. Epidemics of measles and influenza, even in good hygienic conditions, increase the spread of hemolytic streptococci, which are the chief causes of serious complications in these diseases. 9. Often, however, epidemics of tonsillitis and high carrier rates of hemolytic streptococci are signs of the existence of environmental conditions which favor a rapid and easy transmission of infection. Chief of such conditions are too great proximity of beds, deficient floor area and deficient ventilation in dormitories. 10. Adequate spacing and ventilation of dormitories and classrooms, and proper intervals between beds in dormitories and school sanatoriums are important factors in the prevention of the spread of infection.

Grass[4] states that, if tuberculosis becomes malignant, softening usually sets in, which gradually leads to cavern formation with its serious results. It is therefore important to detect softening in its earliest stages. By taking a smear from the larynx this is generally possible at a time when there is not yet sufficient sputum to permit a diagnosis. The laryngeal smear is obtainable at any time. Thus one does not have to rely upon the patient to send his sputum, and simulation as well as dissimulation can be avoided. In some instances the diagnosis can be made directly from the smear; however, it is often time-consuming, since, because of the small quantity, one has to work with great care. The positive results become more numerous, the test is more reliable and the method is simpler if, instead of, or besides the direct demonstration, the culture method is resorted to. It is advisable that the examinations be made in laboratories.

The etiologic relationship of streptococci of the throat to various forms of arthritis has been the subject of many investigations. Pilot's[5] purpose is to bring forth the importance of septic sore throat and its relationship to arthritis. In the course of investigations of sporadic cases of septic sore throat due to Streptococcus epidemicus, Pilot noted acute arthritis in three instances during convalescence. Arthralgia was observed in several cases, appearing after apparent recovery of acute sore throat and persisting for several months. From bacteriologic studies, the arthritic manifestations appear to be due to Streptococcus epidemicus in the tonsil or throat. During the acute stage, this streptococcus was obtained in predominant or pure numbers. In 3 patients with acute arthritis, the streptococci were found in pure cultures in the throats, two of which were devoid of tonsils. The arthritis disappeared simultaneously with the disappearance of Streptococcus epidemicus from the throat. In the patients with persistent arthritic pains, the streptococci were found in the tonsils usually in predominant numbers, and with the removal of the tonsils, the arthritic pains disappeared. Streptococcus epidemicus in routine cultures from throats was found in less than 1 per cent and three of the four carriers of these streptococci had arthritic symptoms. One may assume that when this organism is found in the throat there may be an etiologic connection to the associated pathology.

A review of the various factors involved in the tonsil problem convinced Bürgers and Wolffheim[6] that many factors are as yet not fully understood. Following a discussion of the bacteriology of the pharyngo-oral cavity, they state that the bacteriology of healthy and of diseased tonsils as well as the question of the pathogenicity of the microörganisms is still not fully understood. They consider it of great importance to detect a relationship between the various forms of tonsillitis and the microörganisms that are found during these diseases in the coatings of the tonsils, in the lacunar secretions and in the tonsillar plugs. They think that certain serologic reactions could serve as indicators for such correlations. Of the various methods of specific immunity tests, three were tried: dermoreaction precipitation and phagocytosis. By intracutaneous vaccinations, analogous to the Dick test, only noncharacteristic, positive reactions were obtained, but they are probably only of an allergic nature and do not permit conclusions in regard to the specificity of the microörganism. The precipitation reactions gave no indications for a definite regularity and in their present form they therefore do not seem suitable for these purposes. In tests on the phagocytosis (opsonic action) the authors call attention to the fact that the leukocytes show a different behavior toward bacteria. When a bacterial emulsion is mixed with blood and after some time those leukocytes are counted that have ingested bacteria, their percentage of the total is termed the phagocytic number, a low number indicating unfavorable conditions (low protective power, deficiency of opsonins). The results of the tests on phagocytosis are summed up as follows: In acute tonsillitis, continuous tests revealed an increase of the phagocytosis, which paralleled the course of recovery and the decrease of the fever. Tests several weeks after

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BACTERIOLOGY

Undulant fever is now a well-established disease of man, but much information is wanting concerning its diagnosis, modes of infection, pathology and treatment. Soon after Brucella abortus was discovered in raw milk, it was observed that the calves artificially fed with infected milk developed infected lymph nodes draining the mouth and the pharynx. This observation on calves suggested a further study of diseased tonsils from man. Fifty-five pairs of tonsils were examined by Carpenter and Boak[1]. The technique used by the authors was that after surgical removal each tonsil was placed in a closed sterile jar and brought to the laboratory, where it was transferred with a sterile pair of forceps to a sterile petri dish and described. Cultures were made after the surface of the tonsil had been seared with a hot spatula. Bits of the tissue or any purulent exudate were transferred to an infusion agar to which sterile horse serum had been added. The tubes were then placed in a jar in which 15% of the air had been replaced with 10% carbon dioxide and incubated at 37°C for 4-5 days. After 48 hours' incubation, abortus-like colonies were fished from the growth on the agar slants and replated. Final identification was made by the agglutination and the agglutin absorption tests.

The remainder of the tonsil was ground in a sterile mortar with 5 cc. of sterile physiologic solution of sodium chloride, which made a very heavy extract. A guinea-pig was injected subcutaneously with 1 cc. of the extract. The guinea-pig was killed and examined for evidence of Brucella abortus infection, from five to six weeks after injection. An agglutination test was made on the guinea-pig's serum for abortus agglutinins. The tissues were examined for lesions of the disease and cultures made from the spleen and liver, as well as from other organs when they showed suggestive evidence of the infection. Cultures were identified as Brucella abortus by the same methods as heretofore mentioned. The results of these examinations revealed Brucella abortus in either one or both tonsils from eight of fifty-six patients. In three patients, Brucella abortus was recovered from both tonsils, while in the other five it was obtained from only one.

Pilot and Davis[2] state that tonsillectomy in carriers of Streptococcus epidemicus causes complete and rapid disappearance of this organism from the throat. Persons presenting sporadic septic sore throat, otitis media and mastoiditis often become carriers of S. epidemicus in tonsillar crypts. S. epidemicus may cause acute infection in tonsillectomized persons, but the organisms rapidly disappear during convalescence. It was found in the crypts of 13.8 per cent of 506 pairs of extirpated tonsils. All of the patients gave a history of sore throat. Many whose tonsils revealed S. epidemicus had cervical adenitis, arthritis or arthritic pains. The removal of the tonsils in these patients resulted in marked clinical improvement.

Glover and Griffith[3] believe that the following tentative suggestions are justified in view of all the available evidence: 1. Epidemic tonsillitis is one of the most common causes of invalidity in boarding schools and is due to infection with hemolytic streptococci of the Streptococcus pyogenes group. 2. Infection of the throat with hemolytic streptococci produces varying clinical pictures in different persons. These include the following: first, a symptomless infection, or healthy carrier state; secondly, tonsillitis; thirdly, febricula, feverish catarrh or pharyngitis, without noticeable sore throat; fourthly, scarlet fever. Any of the latter three conditions may be followed by otitis media or by acute rheumatism. 3. Many serologic types of hemolytic streptococci may cause scarlet fever, but certain types, the four "chief" types predominate. Types 1, 2, 3 and 4 are together responsible for 70 per cent of the cases of scarlet fever admitted to fever hospitals in England, the remaining 30 per cent being caused by strains forming a group of heterogeneous types. 4. Epidemic tonsillitis without rash is generally attributable to strains belonging to the heterogeneous group. These strains cause scarlatina when their toxigenic powers are sufficiently high to overcome the antitoxic immunity of the person attacked. 5. Observations made on two outbreaks of tonsillitis (only one of which has been

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described) attended with severe complications but without typical scarlatina rashes suggest that the two chief types concerned, types 1 and 2, may not invariably be of high toxigenicity. 6. In any epidemic of scarlet fever, cases of tonsillitis and mild pharyngitis occur side by side with the cases of scarlet fever, and, if bacteriologic examination is made, a number of healthy carriers will also be detected, all yielding the same type of hemolytic streptococcus as the scarlatinal cases. These unsuspected sources of infection constitute one of the most difficult problems in the control of scarlet fever. 7. Epidemics of tonsillitis in schools are generally associated with a high carrier rate of hemolytic streptococci. 8. Epidemics of measles and influenza, even in good hygienic conditions, increase the spread of hemolytic streptococci, which are the chief causes of serious complications in these diseases. 9. Often, however, epidemics of tonsillitis and high carrier rates of hemolytic streptococci are signs of the existence of environmental conditions which favor a rapid and easy transmission of infection. Chief of such conditions are too great proximity of beds, deficient floor area and deficient ventilation in dormitories. 10. Adequate spacing and ventilation of dormitories and classrooms, and proper intervals between beds in dormitories and school sanatoriums are important factors in the prevention of the spread of infection.

Grass[4] states that, if tuberculosis becomes malignant, softening usually sets in, which gradually leads to cavern formation with its serious results. It is therefore important to detect softening in its earliest stages. By taking a smear from the larynx this is generally possible at a time when there is not yet sufficient sputum to permit a diagnosis. The laryngeal smear is obtainable at any time. Thus one does not have to rely upon the patient to send his sputum, and simulation as well as dissimulation can be avoided. In some instances the diagnosis can be made directly from the smear; however, it is often time-consuming, since, because of the small quantity, one has to work with great care. The positive results become more numerous, the test is more reliable and the method is simpler if, instead of, or besides the direct demonstration, the culture method is resorted to. It is advisable that the examinations be made in laboratories.

The etiologic relationship of streptococci of the throat to various forms of arthritis has been the subject of many investigations. Pilot's[5] purpose is to bring forth the importance of septic sore throat and its relationship to arthritis. In the course of investigations of sporadic cases of septic sore throat due to Streptococcus epidemicus, Pilot noted acute arthritis in three instances during convalescence. Arthralgia was observed in several cases, appearing after apparent recovery of acute sore throat and persisting for several months. From bacteriologic studies, the arthritic manifestations appear to be due to Streptococcus epidemicus in the tonsil or throat. During the acute stage, this streptococcus was obtained in predominant or pure numbers. In 3 patients with acute arthritis, the streptococci were found in pure cultures in the throats, two of which were devoid of tonsils. The arthritis disappeared simultaneously with the disappearance of Streptococcus epidemicus from the throat. In the patients with persistent arthritic pains, the streptococci were found in the tonsils usually in predominant numbers, and with the removal of the tonsils, the arthritic pains disappeared. Streptococcus epidemicus in routine cultures from throats was found in less than 1 per cent and three of the four carriers of these streptococci had arthritic symptoms. One may assume that when this organism is found in the throat there may be an etiologic connection to the associated pathology.

A review of the various factors involved in the tonsil problem convinced Bürgers and Wolffheim[6] that many factors are as yet not fully understood. Following a discussion of the bacteriology of the pharyngo-oral cavity, they state that the bacteriology of healthy and of diseased tonsils as well as the question of the pathogenicity of the microörganisms is still not fully understood. They consider it of great importance to detect a relationship between the various forms of tonsillitis and the microörganisms that are found during these diseases in the coatings of the tonsils, in the lacunar secretions and in the tonsillar plugs. They think that certain serologic reactions could serve as indicators for such correlations. Of the various methods of specific immunity tests, three were tried: dermoreaction precipitation and phagocytosis. By intracutaneous vaccinations, analogous to the Dick test, only noncharacteristic, positive reactions were obtained, but they are probably only of an allergic nature and do not permit conclusions in regard to the specificity of the microörganism. The precipitation reactions gave no indications for a definite regularity and in their present form they therefore do not seem suitable for these purposes. In tests on the phagocytosis (opsonic action) the authors call attention to the fact that the leukocytes show a different behavior toward bacteria. When a bacterial emulsion is mixed with blood and after some time those leukocytes are counted that have ingested bacteria, their percentage of the total is termed the phagocytic number, a low number indicating unfavorable conditions (low protective power, deficiency of opsonins). The results of the tests on phagocytosis are summed up as follows: In acute tonsillitis, continuous tests revealed an increase of the phagocytosis, which paralleled the course of recovery and the decrease of the fever. Tests several weeks after

recovery from the attack revealed a marked decrease of the phagocytosis compared with the acute stage. In cases of chronic tonsillitis the authors studied the influence of the causal therapy (tonsillectomy) on the specific protective reaction, the phagocytosis. Here there were likewise two reaction types. Usually the phagocytic number is low before the operation and it increases after the operation, or it is high before the operation and decreases following it. The latter condition is most frequently noted with high fever (sepsis, acute bronchitis). From this the authors conclude that the phagocytosis test in combination with the other symptoms is extraordinarily valuable in the diagnosis of chronic tonsillitis, and it also indicates whether a systemic disease has a causal relationship to a tonsillar focus; thus it indicates whether tonsillectomy is necessary. If the phagocytic number is low, considerably less than 50, the protective power of the organism is low and there is a deficiency of opsonins. In these cases tonsillectomy is advisable, for the phagocytic number usually shows an increase several weeks after the operation. However, if the phagocytic number is around 50 one may assume either that there is no connection between the tonsillar focus and the systemic disease or that the opsonin content is sufficient to combat the infection. The same conditions exist when the process is localized. In such cases tonsillectomy is not necessary. However, it is advisable to keep the patient under constant observation for the condition may change rapidly.

ANATOMY

In studying the accessibility of the natural orifice of the maxillary sinus for maxillary irrigation, Myerson[7] successfully entered the orifice in 138 out of 170 maxillary sinuses or 81 per cent. In this series of ostia, 34 were horizontal, 6 oblique and 98 vertical. Myerson found that the proximity of the middle turbinate to the lateral wall does not appear to interfere with the passage of a cannula into the maxillary ostium. There may be an occasional exception; in this study, there was one in 138 instances. The angle (bulla-uncinate) formed by the posterior upward curve of the bulla and the posterior downward curve of the uncinate is the most constant guide to the location of the ostium.

It would appear from this study that irrigation of the maxillary sinus through its ostium is a feasible procedure in a sufficiently large percentage of cases to make it worthy of trial.

PHYSIOLOGY

Hilding[8] has been studying the drainage of the nose, by using various dyes and reports that:

"The nasal mucosa in the anterior portion of of the nose, where it meets the inrushing inspired air, does not exhibit ciliary activity, as indicated by the movement of the overlying mucus. This inactive area lies in the anterior third of the nose and drains largely through the inferior and middle meatuses. It is irregular in size and shape. It ordinarily includes the preturbinal region, and the anterior ends of the inferior and middle turbinates, approximately the anterior one-fourth to one-third of the septum and a narrow strip across the floor. The mucosa posterior to these areas exhibits active ciliary motion, which is greatest in the regions best protected from the flow of inspired air.

"The protective layer of mucus that overlies all these nasal surfaces is continuous with that of the pharynx and esophagus. It moves, throughout its extent, very much in the manner of an intact membrane. It is motivated by ciliary action and traction. The nose may be said to have a new lining about once every ten minutes in the posterior two-thirds of its extent and about once an hour in the anterior one-third. The drainage of secretion from the anterior inactive areas, where dust and bacteria lodge, is accomplished by traction and gravity. The course from the lateral wall is largely through the meatuses. The motion is slow, requiring an hour or more for drainage. The drainage of the active areas is rapid, requiring only from three to ten minutes. The course in general is toward the nasopharynx."

RETROPHARYNGEAL ABSCESS

Brooks[9] writes on his experience with acute retropharyngeal abscess and summarizes the literature and the anatomy.

His first case report is interesting as it followed tonsillectomy performed under local anesthesia. His patient was twenty-two years of age, and developed a retropharyngeal abscess which pointed externally and was opened anterior to the sternomastoid muscle.

Seltz[10] also reports a retropharyngeal abscess following tonsillectomy under local anesthesia.

This abscess was of tremendous size, dissecting well down past the level of the larynx. It was drained externally through an incision made along the posterior border of the sternomastoid muscle.

Septicemia due to retropharyngeal abscess has been well recognized by the profession. Gettes[11] reports such a case in which he ligated the internal jugular vein to combat the infection. In this he was following the work of Mosher and more recently that of Waldapfel.

Kaufman[12] reports a fatal case of retropharyngeal abscess due to erosion of the carotid artery.

TONSILS AND ADENOIDS

Russell[13] emphasizes the importance of the nose in the production of faucial and pharyngeal complaints. The way in which the tonsils affect the nose is well recognized, but the con-

verse is also true. It is unfortunately impossible for a laryngologist to follow up all his cases of tonsillectomy and see whether the operation has always succeeded in stopping sore throats, but general practitioners have sometimes the thankless task of so doing, and they have sometimes been disappointed in the results of tonsillectomy done for this purpose. One reason why this aspect of sore throats has been examined afresh is a change that has arisen with regard to the skill displayed in tonsillectomy. Before the war, the explanation of the failure to cure symptoms was often that portions of the tonsils were still present after operation, especially during the period of enthusiasm that followed the demonstration by Sluder and by Whillis about 1910 that one could completely enucleate tonsils with the guillotine; and for ten or fifteen years the prevalence of tonsillar remnant and of scarred-up palates sufficiently explained the many failures to cure throats by tonsil operations. But although skill acquired by practice has led to a noticeable decrease in the number of incomplete operations, yet one not infrequently sees cases, in both children and adults, of sore throats persisting in spite of careful removal of the tonsils and adenoids, especially in certain years. This was the case in 1919 and 1929 and also this year. The author's paper ostensibly on throats, is really a covert attack on the antrum. He freely admits this, except that he would include hidden ethmoidal infection as being at least as frequent. He does not urge operation on the ethmoids in this connection but submits that there is a case for an early and not extensive operation on the antrum; and believing as he does that it is doubtful whether the mucosa can ever return really to normal when it has reached the stage of chronic empyema, he recommends indications for drainage based on the repetition of a convincing chain of circumstantial evidence rather than a belated positive result of an exploratory puncture.

According to Sheldon[14], relapses of acute rheumatic arthritis or carditis are often preceded by an initial fever—usually demonstrably due to nasopharyngeal infection—at an interval of from one to four weeks beforehand. Occasionally the rheumatic relapse occurs synchronously with the throat infection. The removal of the tonsils does not influence the likelihood of a rheumatic relapse. The use of acetylsalicylic acid as a prophylactic measure against rheumatic relapses after throat infections is mentioned. Further investigation on this point is required. The element of infectiousness in acute rheumatism lies in the preliminary throat infection, and these throat infections may assume epidemic proportions.

Selkirk and Mitchell[15] content themselves with the statement that in their study of children three years after tonsillectomy and adenoidotomy there was a lessened incidence of colds, nasal obstruction and sore throat, while sinus infection, headache and growing pains were increased in frequency. As a criticism of their study and that of many others, they note certain modifying factors to which no attention or too little attention is paid. These are age, sex, race, heredity, financial class, season, effect of adenoidotomy alone, length of observation after operation, source from which the history and other data are obtained, incidence of tonsillectomy in the community at large, and the suitability of the control group. The neglect of a consideration of these factors often invalidated the conclusions. There are several methods of approach in the evaluation of results, the method of choice varying with the symptom studied. The method of studying a large number of symptoms and pathologic conditions simultaneously usually results in superficiality. Separate and intensive studies of a single symptom in relation to tonsillectomy have been made mainly on the rheumatic syndrome and probably offer the best means of approach in studying other symptoms. Many of the symptoms and conditions popularly supposed to be associated etiologically with diseased tonsils are those in which the natural course and incidence, regardless of the effect of the tonsillectomies, are not known. Many of them, too, are affected by other factors than tonsillectomy in an as yet unknown manner. It would seem that the conclusions drawn from some of the studies which are widely quoted as showing the effects of tonsillectomy are decidedly open to question because of failure to consider other factors in evaluating the results.

Keen[16] reviews a continuous series of 9,344 tonsil and adenoid operations in children, with the special object of studying the question of excessive and dangerous hemorrhage. The subject is discussed under various headings and the main observations and conclusions are as follows: 1. Primary hemorrhage depends to some extent on the method of operating. The average amount of blood lost after the guillotine operation was found to be just under 2 ounces (60 gm.). 2. The dissection and guillotine operations are contrasted from the point of hemorrhage and from the point of view of operative "failures". The author strongly supports the guillotine method of enucleation and justifies this opinion by his end-results in the whole series. Regrowth of tonsillar tissue after complete enucleation does not occur in his experience. 3. Comparatively rare cases of excessive or reactionary hemorrhage occur in all large series of operations. In his hands the proportion of these cases was just over 1 per cent (110 cases among 9,344 operations). An analysis was made of the amount of blood lost in these cases, and the best methods of dealing with this complication are described. 4. It is shown that a second

anesthetic is extremely dangerous in hemorrhage cases. An account is given of three personally observed fatalities, followed by a discussion on the possible causes of death. 5. Dangerous hemorrhage appears to come more often from the nasopharynx than the tonsil areas. 6. The literature on the prophylactic use of calcium lactate is reviewed. The author's experience, and figures of the amount of reactionary hemorrhage in the "bleeders", support the view that calcium lactate is useful in shortening the clotting time of blood. 7. Secondary hemorrhage after the tonsil and adenoid operation is defined, with an analysis of all the cases that occurred during the ten year period. 8. The view is expressed that hemorrhage after the removal of tonsils and adenoids is due to deficient clotting power of the blood and that anatomic and surgical considerations are of secondary importance. Then follows a description of a simple test for determining the bleeding time and a theoretical discussion on coagulation time, bleeding time and the various hemorrhagic diatheses. 9. An account is given of cases in which bleeding time tests are applied, and of the way they illustrate the various theoretical points.

In studies of 161 tonsillectomized children, aged between 1 and 6 years, Orosz and Kugler[17] found that contrary to the theory of a relationship between tonsillectomy and the Schick reaction, which was advanced by Tomlin and later corroborated by Schick and Topper as well as several others, they did not observe any relationship whatever between the two. On the contrary, they observed an increased susceptibility. Neither did the authors find a relationship between the aftergrowth of the tonsils and the behavior of the reaction. They think that the fluctuations in the negativity of the Schick reaction are largely due to the epidemiologic conditions existing at different times, and they think that the results which Schick and Topper ascribe to tonsillectomy may be due to some of these incalculable external factors. The practical conclusions which Schick and Topper arrive at from their theory, namely, to resort to tonsillectomy instead of to immunization, and to test tonsillectomized children before immunization in order not to give superfluous treatment, are likewise rejected by the authors.

Hill[18] finds that while adenoidectomy is a simple procedure, it is more difficult to achieve a clean result than in tonsillectomy. This is due to a tendency to hurry through this part of the combined operation, to the handicap of the bleeding, to dull instruments and to the difficulty of working in a blind space. Visual inspection of the nasopharynx will reveal many tags and remnants, and expedite their removal, and it should be employed as a routine measure.

NASAL OBSTRUCTION

Shea[19] traces the systemic consequences which may result from nasal obstruction. He states that early obstruction tends to retard pneumatization of the sinus and the normal growth of the ala nasi and upper maxilla. Intranasal obstruction retards the growth of the turbinates. The manifestations of reflex irritation are headache, neuralgia, vasomotor rhinitis, asthma and emphysema, according to Shea. The lack of oxygen is manifested systematically by weakness, anemia and impaired cerebration.

NASAL SEPTUM

Goodyear[20] reports an osteoma of the nasal septum. He was able to find only one other case in the literature. The usual site of osteoma of the nose is in the ethmo-orbital region, and although they are benign tumors, they are often malignant in their affect on surrounding structures. An osteoma of the nasal septum is so exceedingly rare that Goodyear's case is unusual.

According to Havens[21], five cases of primary nasal tuberculosis have been observed in the Mayo Clinic. The patients were all 50 years of age or more. Three of the five patients had symptoms of obstruction. All had granular masses involving the septum or turbinates, but in only one instance was ulceration noted. In two cases the septum was perforated, in one instance owing to previous treatment with the cautery. In one case treatment was not given; diathermy was used in one case and radium in three cases. In the case in which treatment was by diathermy, recurrence developed. The region in which the recurrence occurred was further cauterized by the physician in the patient's home community, who has reported that a second recurrence has not taken place after ten months. Two patients treated with radium were free from recurrence when last observed four and one-half months and four years, respectively, following treatment. The third patient has been treated too recently to allow any statement as to results. On the basis of his observations, the author concludes that primary nasal tuberculosis is more common in women in the later years of life than in younger women or in men of any age, that it is characterized by the formation of granulomatous masses on the septum and turbinates, that the symptoms are those of obstruction due to tumor and associated crusting, and that radium and diathermy, or the cautery, are efficient methods of treatment.

NASAL ACCESSORY SINUSES

Paterson[22] states that roentgen examination of the accessory nasal sinuses often serves to draw attention to cases of antral infection. It may also disclose cases of latent empyema of the antrum, not otherwise discoverable. These cases are those in which the lesions complained of are secondary complications of an unsuspected sinus lesion. Such complications fall into five main groups. The orbital group includes an extensive series of reported cases of defects of vision and

orbital complications of serious moment. The cranial group includes those producing headaches, facial pain, or neuralgia of various types. The cerebral group is an interesting group in which disease simulating mental disease is found to be entirely due to sinus infection. The thoracic group has been frequently described recently and consists of those cases of nonspecific pulmonary infection called chronic bronchitis, bronchiectasis, or asthma which are secondary to unsuspected sinus lesions. In addition there is a miscellaneous group in which distant lesions are unexpectedly found to depend on the presence of trouble within the sinuses. Illustrative cases are quoted.

Howarth[23] believes that the frontal sinus and the anterior ethmoid cells are nearly always simultaneously involved, and consequently any operation that is considered must be one that will drain both adequately. He is not much in favor of the stereotyped intranasal operation but prefers to remove as much of the anterior part of the labyrinth as may be necessary, and to do this as thoroughly as possible, relying on subsequent sounding to effect a cure of the overlying sinusitis.

During the last ten years Harmer and Russell[24] have treated sixty-three patients with frontal sinusitis by means of intubation. The operation has proved simple to carry out and absolutely free from danger.

Because of its simplicity, it has been possible to perform it on many patients to whom one would have hesitated to recommend more serious radical treatments. The aim of the operation is twofold. First, to provide free drainage and ventilation, both externally and internally. Secondly, to dilate the bony frontonasal canal without damaging its lining membrane. Intubation with an elastic tube fulfills both these requirements, and if the tube is slowly enlarged it does not cause irritation or inflammation. On the contrary, the lining of the sinus in most cases rapidly recovers. In successful cases, a straight passage from the nose to the sinus is obtained, through which a cannula can easily be passed. In some cases, after a period of years, it may be difficult to find the entrance to the infundibulum, especially if there is an obstruction in the nose, such as a deflected septum or enlarged ethmoid cell. But failure to pass the cannula seldom results in a return of the symptoms. The cases in which the treatment is likely to fail are those in which there has been long-standing inflammation that has caused scarring of the soft tissues and particularly those in which there have been numerous previous operations. In many of the latter the ducts no longer exist, having been replaced by masses of scar tissue. Another cause of failure has been involvement of other sinuses notably when the opposite frontal sinus is infected and communicates with the one that has been intubated. In such cases, reintubation may be necessary.

Freedman[25] reports a case of odontoma of the maxillary sinus. In the differential diagnosis, he states that: "Dentigerous cysts are slow growing and painless, and when they reach a considerable size, encroach on the nasal cavity, palate or orbit. The shadows they cast in roentgenograms are round and smooth, with definite outline; they are radiolucent because of the fluid in the tumors. The surface of the bone is spongy, while the odontoma is dense. Osteosarcoma shows signs of malignancy soon after the beginning of its growth, and the tissues break down.

In their early development, bone cysts may be mistaken for dentigerous cysts or odontomas. As they increase in size, their walls may be easily penetrated and the fluid contents evacuated, while odontomas remain solid.

Anderson[26], reviewing the work of the Mayo Clinic, found that there were 161 cases of suppurative frontal sinusitis for which operation was indicated. Among these were 112 in which some type of external operation had been performed. In 62 of the cases some form of external operation had been performed elsewhere, in 50 it had not. In all of the former group and in 23 of the latter, operation was again performed. Sixteen of the patients were not completely relieved. From the study of these failures, Anderson concludes that the principal preventable causes of failure of the external frontal operation were:

1. Incomplete operation.
2. Failure to obliterate completely the sinus cavity in the Killian type of operation.
3. In the Lynch type of operation, the collapse of the soft parts and contraction of the scar, closing off the nasofrontal duct.
4. Failure to provide adequate room for proper drainage through the nose.
5. Failure to maintain the nasofrontal duct long enough after the operation.
6. Too early surgical intervention in acute infections.
7. Failure to remove completely all the ethmoid and fronto-ethmoid cells connected with the frontal sinus.

In a very complete paper, Wilensky[27] discusses osteomyelitis of the skull in relation to nasal sinus disease. To summarize his article, the clinical picture of the majority of these cases is very similar. The infection that leads to the fatal result is usually postoperative, and occurs within 2 or 3 days after an operation for disease of the nasal accessory sinuses. The diploe of the frontal bone is invaded by the organisms, and an osteomyelitis is set up. The infection spreads thence, on the one hand, through the outer table, giving rise to subperiosteal abscesses beneath the scalp; on the other hand, it passes inward, and may subsequently give rise to extra-

dural or subdural abscess, general meningitis, cerebral abscess or a thrombosis of the longitudinal or other large sinuses.

The dura mater is affected in practically all cases, and the pachymeningitis may remain localized a long time. Thrombosis occurs chiefly in the lateral or longitudinal sinuses. The invasion of a large venous sinus is often manifested by emboli with distant metastases.

When the osteomyelitis becomes evident, it is necessary to operate, and the operation should be as extensive as possible. The cranial bones should be resected beyond the limits of the lesion. If the wound continues to granulate and if the temperature remains high, sequestrums are present and they must be removed.

Furstenberg[28] presents a remarkable series of cases of osteomyelitis of the skull, and from these cases he draws the following conclusions:

1. We are alarmed at the frequent occurrence of cranial osteomyelitis following operation upon the nasal accessory sinuses. What error of omission or commission in our surgical technic is responsible for this grave accident? We are much in the dark concerning this question, though it opens an important field for further investigation.

2. While infection by continuity of tissue is perhaps the common form of extension, some cases of osteomyelitis of the skull are definitely chargeable to an infection which spreads between dura and bone, eroding the latter by pressure or infecting it through a thrombophlebitis of the intracranial diploic veins. There are a number of pathologic studies which suggest this mode of diffusion.

3. Treatment calls for the radical removal of the full thickness of the diseased bone. In severe cases a two or three stage operation is recommended.

4. The regeneration of bone in osteomyelitic defects of the skull is a frequent occurrence. There need be no apprehension in the radical removal of a large portion of the cranial vault, since repair is often complete. Likewise plastic procedures for the obliteration of cavities in the skull by the use of free transplants of bone are seldom indicated.

5. Any tissue of a fibrous connective tissue type in the region of a cranial defect may participate in the evolution of bone. Periosteum is the classical example, although the dura mater may play a similar rôle in osseous regeneration.

6. There are a number of general conditions which definitely influence the proliferation of bone. The effect of nutrition, mechanical irritation, heat, light, and infection is unquestionable. The knowledge of these influences is commonplace. This reiteration seems justified as a plea for further investigation and a more scientific understanding of those factors which influence tissue repair.

Richards[29] studied the records of five hundred children with sinus disease treated at the Children's Hospital. From this study he concludes that:

1. Sinusitis in children has become during the past ten years a well-recognized entity, underlying local nasal symptoms and contributing to systemic disturbances in a relationship formerly never dreamed of.

2. Certain types of sinusitis are amenable to local and, particularly in the acute cases, surgical treatment.

3. Many cases of chronic sinusitis will defy all local measures, whether surgical or medical, and can only be relieved by investigation of the underlying physiologic and biochemical dysfunctions which exist in the individual patient. Allergic disorders will be found to play an important rôle in this connection.

4. In general, the existence of nasal symptoms will be found to parallel the existence of a pathologic state in the sinus as evidenced by x-ray.

5. Only by study and investigation with every clinical and laboratory facility at hand, principally in a hospital, can adequate study of these conditions be satisfactorily carried out.

As a sequel to his work done with Knowlton, McGregor[31] publishes the study of twenty-six patients who had a second operation on the maxillary antrum. He concluded that (1) ciliated columnar epithelium and glands regenerate in the human antrum following a radical operation. (2) It probably requires six months for the regeneration to approach normal. (3) Infection does not prevent regeneration, although it may modify its character. (4) Debilitating disease does not prevent regeneration. (5) Regeneration was seen to be considerably advanced as early as sixteen days after operation; it must, therefore, begin at an earlier date.

Osmond[32] pleads for x-ray examination of the nasal accessory sinuses in chronic pulmonary suppuration not due to tuberculosis. He believes that if a physician is called to examine a chest clinically, he should include acute and chronic infection of the upper respiratory tract as a possible source of lung symptoms.

In his experience, he found a surprising number of cases showing a chest pathology that was due to an upper respiratory infection.

ORBITAL INFECTION

Porter[30] pleads for closer coöperation of the ophthalmologist and the rhinologist in handling patients with orbital infection. He cites his experience of seeing many cases treated inadequately by simple orbital incision and drainage. He states that there are three distinct stages of the disease (1) edema of the eyelids (2) edema of the lids with exophthalmia with or without limitation of motion, (3) the same as

the second but with evidence of acute abscess formation within the periosteal sheaf of the orbit with horning of the upper and lower lid.

In those cases which are secondary to nasal accessory sinus disease, with evidence of actual pus formation, he advocates an external ethmoid exenteration with removal of the floor of the frontal if it is involved, as well as the Caldwell-Luc type of antrum operation. The ethmoidal incision should be left open, with a rubber tissue drain inserted. In cases due to causes other than sinus disease, the treatment is similar in that it is directed toward the removal of the cause. The orbit should not be entered until there is evidence of pointing or the edema and exophthalmia are so marked as to constitute danger to vision.

THE NECK

Shedden[33] presents a summary of the modern concept of the embryology of "branchial" cysts and fistulas. He further shows, in the study of 42 cases of branchial cyst and nine cases of fistula, that (1) they occur in young adult life; (2) the disease exists a long time before the patient demands relief because it progresses slowly and pain appears late, if at all, and usually only from secondary infection; (3) tuberculosis rarely causes secondary infection; (4) it does not affect the patient's general health; (5) the diagnosis should not be difficult if one keeps the entity in mind, and (6) the treatment involves complete removal of the pathologic process.

Campbell[34] reviews the recent literature on status lymphaticus—the thymus gland and the relations of this gland to the suprarenals.

He feels that otolaryngologists should recognize that various degrees of status lymphaticus exist and have an important bearing on the outcome not only of operations on tonsils and adenoids, but of other operations and diseases in otolaryngology. He feels that we should know the significance of reported thymic enlargements and that this is a symptom of status lymphaticus which in turn is due to deficiency of secretion from the suprarenal glands.

The next step in his mind is to learn to detect status lymphaticus and get a suprarenal gland product rich in medullary and cortical elements.

Richards and Glenn[35] review the history of tracheotomy and, to determine the histopathologic changes that take place, carried out a series of tracheotomies on cats. From their studies, they conclude: 1. Simple incision in the trachea, if not infected, tends to heal with great rapidity. The defect is closed by a connective tissue growth, without any evidence of true regeneration of cartilage. The mucous membrane between heals rapidly, though with a modified type of epithelium. There is little if any tendency for encroachment on the tracheal lumen by the healing tissues in this type of wound. 2. The presence of a tracheal cannula delays the healing of the wound and increases the amount of connective tissue formed about it. So long as there is an adequate opening in the trachea for the cannula and no pressure against the cartilaginous edges, there is very little tendency toward the formation of granulations large enough to cause any appreciable obstruction to the tracheal lumen. 3. Infection about the cannula, occasioned primarily by too close approximation of the wound edges about the cannula, increases the tendency to connective tissue formation. 4. With a large anterior tracheal defect there is little tendency for the superficial tissues to fall in and encroach on the lumen of the trachea. 5. With a tracheal fistula, in the absence of a tube, the wound tends to close rapidly without any impairment of the tracheal lumen.

THE LARYNX

At the Mayo Clinic in 1926-1929 inclusive, five cases of rhythmic involuntary jerking movements of the laryngeal and pharyngeal muscles are reported by Childrey and Parker[36]. These myoclonic movements are very common in epidemic encephalitis and it is natural to consider that disease phase in a differential diagnosis. The jerking characteristic of myoclonia is sudden, quick and like that produced in the muscle by intermittent faradic shocks. The muscle relaxes quickly but contracts again rapidly so that continuous twitching is present that varies in speed in different cases. These movements may occur during the acute phase of epidemic encephalitis or may appear as chronic manifestations months or years afterwards.

In this article Wilson[37] reviews a number of cases of laryngeal vertigo and reports one case. Catalepsy is shown to be closely associated. The theories of the causation are discussed (vascular and reflex). The condition is characterized by a sudden fall to the ground and a speedy recovery with or without loss of consciousness.

Katz[38] reviews the principle of the use of sunlight in tuberculosis of the larynx and presents excellent experimental and clinical evidences of its sufficiency. He improves upon both Mayer's and Wessely's method of direct irradiation of the larynx by attaching a long quartz applicator to the Kromayer lamp. This quartz applicator introduced through a laryngoscope makes possible direct contact of the ultraviolet light to the affected area under control of the eye. Katz contends that treatments with ultraviolet light are of value as an auxiliary measure. If ulceration of the larynx is present, he recommends treatment with trichloracetic acid. In cases of edema or infiltration, electrocauterization is his method of choice.

Clerf[39] reports three cases with congenital stenosis of the larynx. He lists the theories as to cause as: (1) Trophoneurotic (2) Inflammatory (3) Hereditary (4) Embryologic theory of adhesions, which he states is the soundest and really only tenable theory.

It is definitely known that in the early stages of development, the primitive vocal cords are adherent to each other. After a certain length of time this fusion normally dissolves and establishes the adult condition of ventricular bands, ventricles and vocal cords.

He pleads for a direct laryngoscopic examination of every infant with respiratory difficulty or aphonia.

Benson[40] is of the opinion that when symptoms of croup are suspected to be due to diphtheritic infection the laryngoscope, supplemented by bacteriologic examination of the larynx, affords the most accurate method of diagnosis. In severe diphtheritic infection, inspection of the larynx will indicate the best method of relieving the respiratory distress. Aspiration is indicated when dyspnea is due to extensive membrane formation. When gross subglottic edema is the cause of the respiratory difficulty, operative measures are necessary. Fewer patients with laryngeal diphtheria require operation if aspiration is judiciously employed. Direct laryngoscopy permits the introduction of an intubation tube by visual guidance, thus diminishing the risk of trauma associated with the indirect method of intubation. The author emphasizes the fact that while as yet satisfactory statistical evidence is lacking, one needs only to witness the dramatic relief following suction in certain cases of severe laryngeal diphtheria to form the opinion that this method of treatment is worthy of serious consideration.

In a review of the literature and from the study of eighteen cases of bilateral abductor paralysis seen at the Lahey Clinic, Hoover[41] proposes a submucous resection of the vocal cord. The operation consists of laryngo-fissure with elevation of the mucous membrane of the vocal cord and lateral laryngeal wall, with the removal of the subcutaneous tissue between the mucous membrane and thyroid cartilage. The larynx is packed holding the surface epithelium against the thyroid cartilage. In four patients in whom this operation had been tried, relief was obtained.

According to Pack and Craver[42], lateral roentgenograms of the neck are a useful supplementary means of studying tumors of the larynx and thyroid. Tuberculosis of the larynx gives a hazy, indistinct outline, owing to the invasion of soft parts and the rarefaction of the ossified cartilages. Syphilis of the larynx presents a picture of sharp, distinct ossified areas, owing to increased proliferation of bone. Lateral roentgenograms reveal the anteroposterior compression, tracheal stenosis and tracheomalacia produced by certain types of goiter and by tumors of the thyroid. Carcinoma of the thyroid may perforate the trachea to form an intratracheal tumor, easily visualized on the roentgenogram. Lateral roentgenograms of the neck exhibit the outlines of retropharyngeal tumors. Some of these growths are inflammatory, whereas others are neoplastic, e.g., neurogenic. Carcinomas of the base of the tongue, valleculae, epiglottis and aryepiglottic folds distort the lateral silhouettes of these structures to produce a characteristic roentgenogram. Intrinsic laryngeal cancers obliterate the light oval areas on the roentgenogram that represent the ventricles of Morgagni. The peculiar punched-out appearance of the thyroid cartilage as seen in the roentgenogram is always specific for laryngeal cancer.

MALIGNANT DISEASE

Primary malignant disease of the sphenoid sinus is extremely rare. Davison and Kahr[43] report two cases. The only previous cases in the literature were those of Dr. Leon E. White. Both of these cases reported by the authors show a close similarity, in that there was direct extension into the middle and posterior fossae, compressing practically all the cranial nerves.

New and Childrey[44] present a very thorough review of a study of 357 cases of tumors in tonsils and pharynx. As a result of this study they conclude: The squamous cell epitheliomas in this situation are almost five times more common than all other malignant tumors. Sarcomas in the pharynx are principally of the lymphosarcoma type. Next in order of frequency is the fibrosarcoma commonly occurring in the nasopharynx. Adenocarcinomas of the mixed tumor type are found in 74 cases. They also enumerate the hemangio-endothelioma, melano-epithelioma, myeloma and malignant dermoid. Metastasis to the cervical lymph nodes occurs early in epithelioma and lymphosarcoma. Epithelioma may be confused with Hodgkin's disease, particularly if found in the nodes bilaterally, as often occurs. Cervical metastasis is so common that in every case of enlargement of the neck, that cavity of the pharynx should be searched carefully. The average duration of all the tumors studied in these cases was seven and four-hundredths months. The miscellaneous group included two cases of long duration; a melano-epithelioma had apparently been present five years and a hemangio-endothelioma twelve years. Symptoms and signs of malignant tumors of the pharynx, as a rule, attract little attention until the tumor has reached a considerable size. In 75 per cent of the cases, early symptoms were referred to the throat. These consisted of paresthesia, local irritation, sensation of fullness or the presence of a foreign body, as well as soreness or pain in the throat. Few cases cause hoarseness or thick speech. Salivation and dys-

phagia were common. The authors feel that biopsy is one of the most valuable aids in diagnosis but should be followed shortly by treatment. The average age of all patients was 54 years. Except for lymphosarcoma, malignancy is rarely primary in the tonsil itself. As to treatment they conclude that lymphosarcoma is more radiosensitive than epithelioma; that certain epithelial growths of highly cellular, undifferentiated types are markedly radiosusceptible; and that irradiation is unquestionably the treatment indicated for sarcoma of the pharynx or tonsil. Depending upon the situation and extent of the lesion, epitheliomas of the tonsil or pharynx are treated with combination of irradiation and surgical measures, cautery or diathermy; namely squamous cell epitheliomas graded 3 and 4. Irradiation also has been used both outside the neck and directly into the wound in the pharynx. They conclude that the prognosis following the treatment of epithelioma and sarcoma of the tonsil and pharynx is questionable. The length of life is placed at from one to two years by most observers, but the authors show a surprisingly large number of living patients of three, five and seven year cures.

Ziegelman[45] reports three cases of malignant disease of the tonsil. Two of these were lymphosarcoma. In Ziegelman's review of the literature it is surprising how many authors consider the condition as rare or infrequent.

The great increase of malignancy, or the great increase in its diagnosis is one of the pronounced changes of laryngological practice. As to treatment, Ziegelman's conclusions are based on these three cases.

Tucker[46] presents a series of thirty cases of laryngofissure for early intrinsic cancer of the larynx. There was no operative mortality. Twenty-five cases have been operated on over a year; there have been two recurrences. The longest duration of cure was seven years. In most of the cases the technique of Chevalier Jackson was used. Thyrochondrotomy as performed by Sir Sinclair Thompson was used in several cases.

He concluded that early intrinsic cancer of the larynx would be recognized when the patient realized fully the possible significance of chronic hoarseness. A biopsy by means of a direct laryngoscopy should be the final step in the diagnostic study. Early anterior intrinsic cancer of the larynx is amenable to cure by laryngofissure which will save the patient's larynx as well as his life with no operative mortality. The anterior intrinsic group includes a large percentage of cases of cancer of the larynx. Laryngectomy will cure a large percentage of posterior cancer if the diagnosis is made while the lesion is still early.

Morrison[47] also pleads for early examination of every patient with persistent hoarseness. In every case, cancer should be considered until proved negative.

Clerf[48] reports an unusual case of carcinoma of the larynx. His patient, who was 21 years of age, had for his first symptoms distress on swallowing and a sensation of lump in the throat. There was no hoarseness and no dyspnea. By mirror examination there was found a large irregular globular sloughing mass which obscured a view of the larynx and seemed to fill completely its upper orifice. The epiglottis and a portion of the right arytenoid were visible. By direct laryngoscopy the growth was found to spring from the apex of the left arytenoid and the left aryepiglottid fold. The motility of the arytenoid was good.

Biopsy showed it to be a squamous cell carcinoma.

Martin[49] believes that cancer of the mouth and of the lower lip in its early stages does not frequently metastasize. For clinical convenience, all cases of cancer of the lower lip are roughly classified into three stages. In the first stage are grouped all cases in which the lesions are confined to the superficial tissues; that is, to the mucocutaneous structures proper. The second stage includes all lesions that have become more extensive, with the induration and ulceration more pronounced and the subcutaneous structures involved without evidence of invasion of the lymph nodes. In the third stage are included all cases in which the lesions are extensive and in which the lymph nodes show unmistakable evidence of metastasis. In 119 cases of cancer of the lower lip treated by roentgen rays, 86 were in the first stage, 22 in the second and 11 in the third stage. In the first and second stages there were 108 patients who did not show evidence of metastases at the time of treatment. Later, four patients developed malignant nodes in the neck and died. The remaining 104 patients (or 96.3 per cent of the patients in the first and second stages) were well after five years. The 11 patients in the third stage had definite lymph node involvement at the time treatment was begun. All the patients in this stage died from cancer. It is the author's experience that early malignant lesions inside the mouth respond remarkably well to small amounts of radium in platinum needles implanted in the tissues. Interstitial radiation inside the mouth is augmented by highly filtered radium packs and roentgen rays applied externally. Mouth hygiene is an important factor in the successful conduct of this class of cases. In incurable cancer of the mouth and lips the patient can often be greatly benefited by radiation therapy, while in some cases life can be prolonged for months.

Pfahler and Vastine[50] summarize their results of 253 cases of cancer of the lip, treated by electrocoagulation and irradiation. Of these 253 cases there were 139 in which the primary lesion

was not more than 1.5 cm. in diameter. In this group, there was only one failure. Lesions more than 1.5 cm. in diameter were found in 48 patients. In 22 patients there were palpable lymph-nodes. Of the cases that could be traced after five years there were 85.5 per cent recoveries and 14.5 per cent deaths.

Trotter[51] calls attention to the fact that the mortality of operations for malignant disease of the pharynx is considerable, whether the actual treatment of the growth is by excision or by radium. The chief factor in this mortality is infection either of the lungs or of the extrapharyngeal tissues but in any case due to access of the pharyngeal contents to the infected part. The actual conduct of the operation can undoubtedly reduce the risk of such infections, but it can never exclude it with certainty. While, therefore, every step of the operation will be oriented toward the limitation of infection, other means must be found of a more general usefulness if the mortality is to be kept below a level prohibitively high. The infection that follows contamination of a wound by pharyngeal mucus has clinical features and a clinical course that is characteristic. It is a progressive sloughing cellulitis, nonsuppurative for several days, accompanied by moderate fever for eight to ten days, when suppuration and the separation of sloughs begin. It is intolerant of the least restraint of drainage and always involves a risk of serious secondary hemorrhage. Clinical experience proves that the cause of this characteristic infection is always present in those who have teeth whether the teeth are many or few, or with or without obvious disease; it also proves that in the edentulous the cause of this infection tends to disappear or to be greatly attenuated. Thus, in the aggregate, the risks of major operation on the pharynx are greatly reduced in the edentulous, and there is no general precaution in the preparation of a patient for such an operation that can compare in value with a clearance of the mouth and a delay until the gums are soundly healed. There are few facts of clinical surgery more firmly established than this relation between the presence of teeth and the liability to sloughing infections of wounds to which the oral or pharyngeal mucus has access; there is certainly none so unquestionably true that is so little valued and acted on. So much is this the case that it is necessary to speak of the subject with emphasis and without ambiguity. It is doubtful whether a major operation on the pharynx is ever justifiable in any but an edentulous patient. This question is quite different from that of clearing the mouth to produce an effect on some general or distant disease. One is not concerned with anything so problematic, but with the attempt to get the pharynx into a condition as near surgical cleanliness as one can, and no other precaution for such a purpose has any claim to compare with this one. It is necessary to lay stress on the fact that if the relative sterility of the mouth is a most important preliminary to any major pharyngeal operation, it is doubly important if radium is to be used. It is perhaps because radium is sometimes regarded as having simplified the treatment of malignant disease of the pharynx that there is a tendency to disregard the stringent necessity for every precaution against infection when it is used. If it is questionable whether any major operation on the pharynx should be done except in the edentulous, there can be no doubt that if radium is to be used this precaution is essential to reasonable safety.

ELECTROSURGERY

Balmer[52] writes on the subject of Electrosurgery. In regarding its application for the removal of the tonsils he states: "Electrocoagulation (a) does not replace surgery in the removal of the tonsils; however, it is better suited in certain selected cases. (b) It is a method par excellence for the removal of post-operative tonsillar tissue and adhesions, lingual hypertrophy and varix and for the extirpation of the tonsils in the presence of certain diseases. (c) There is at present no ideal method for the removal of the tonsils under all circumstances. The combination of surgery and electrosurgery is a means of approaching this ideal. (d) The status of the orthodox surgical tonsillectomy is more secure since the advent of electrosurgery, due to the fact that the post-operative difficulties that are so frequent can usually be remedied with this newer procedure with a minimum of inconvenience, morbidity and mortality to the patient. (e) Nothing short of total removal is indicated, with the exception that diathermocryptectomy may be considered under special circumstances when a more conservative procedure is imperative. (f) Electrocoagulation has many contraindications and limitations.

LARYNGECTOMY

Morrison[53] calls attention to the fact that with the increasing number of persons rendered voiceless by total laryngectomy for laryngeal cancer there is a growing need for a therapy of pseudovoice production without the larynx. Patients with a complete, chronic, air-tight stenosis of the larynx from any cause are similarly in need of a pseudovoice. Laryngeal prostheses, or artificial larynges, have so many disadvantages that their use should be restricted to the patient who cannot learn to produce any type of pseudovoice. There are several types of mechanism of the production of a pseudovoice. One is the true buccal of pseudowhispered voice. Almost every laryngectomized patient learns it without difficulty; it is so faulty and imperfect that it should be employed only when a more satisfactory type cannot be produced. The pharyngeal pseudovoice is usually fairly satisfactory. It is pro-

duced with the aid of a pseudoglottis formed at the back of the mouth or in the hypopharynx, where air that has been aspirated or swallowed into a vicarious air chamber in the lowest hypopharynx or the esophagus and expelled again is set into audible vibrations; such sounds are modified into the vowels and consonants of the pseudovoice. One of the most perfect forms of the pseudovoice is the esophageal type, in which the vicarious glottis lies at the esophageal mouth of Killian, and the vicarious air chamber is formed within the lumen of the esophagus, particularly in its cervical and upper thoracic portions. Here the mechanism of pseudovoice production is strikingly like that of normal speech. In some cases the cardiac end of the stomach, with the stomach air bubble, may be the vicarious air chamber, which furnishes a stream of air for a pseudoglottis at one of the sites mentioned. A fairly definite system of therapy directed toward teaching the patient to produce one or another of the types of pseudovoice has been elaborated. It seems essential that all surgeons who perform total laryngectomy or who have patients with complete, chronic laryngeal stenosis should be aware of the facts given and should attempt to aid these voiceless persons in securing a useful pseudovoice; such patients will not be cut off in their social intercourse, nor will they be unable to earn a living because of their lack of intelligible speech, having in view the fact that almost all laryngectomized patients can learn a pseudovoice, at least, on anatomic and physiologic grounds.

BRONCHOSCOPY

Clerf[54] attempts to answer the question: Is bronchoscopy indicated in tuberculosis? And he concludes by saying that bronchoscopy is rarely indicated in uncomplicated pulmonary tuberculosis. The chief value of bronchoscopy is its aid in diagnosis of unexplained signs and symptoms. Diagnostic bronchoscopy is indicated in obscure pulmonary conditions in which tuberculosis may be suspected but cannot be proved.

Looper[55] writes of his experience in bronchoscopy as an aid in diagnosis and treatment of diseases of the chest. He finds that there are many cases in which final diagnosis can be made only through the help of endoscopy after all other means of investigation have failed.

He hopes that there will soon come a time when the managements of all hospitals of tuberculosis will insist upon a bronchoscopic clinic as an important department in such institutions.

Stiles[56] summarizes 30 cases of vegetable foreign body in the trachea and bronchi. All foreign bodies were removed by preoral bronchoscopy and all the patients recovered. In five cases, after bronchoscopy, it was necessary to perform tracheotomies.

Faulkner[57], also, writes a very complete paper on foreign bodies in the air passages.

Based on their observation of 42 cases of pins at the periphery of the lungs, the Jacksons[58] conclude that

(1) Pins at the periphery of the lungs are practically always lodged head downward. This may be due to the catching of the point and the tumbling over of the head end, and partly to the fact that the head end is the heavier.

(2) The primary cause of pins in the lung is carelessness in putting pins into the mouth. The cause of the pin reaching the periphery is a pawl and ratchet-like action of the pin; the head is free to move downward during inspiratory elongation of the bronchi, and the point catches and resists upward movement during the bronchial shortening of expiration and cough. The limit of downward travel is the smallest bronchus that the head of the pin can enter.

(3) After the initial choking, gagging and cough, there is, in the case of pins at the periphery of the lung, a symptomless interval of a number of months. Sooner or later, however, suppurative changes with productive cough and progressively increasing impairment of health supervene and a fatal ending may eventually occur if the pin is not removed.

(4) All pins at the periphery of the middle and lower lobes can be removed through the mouth by preoral costophrenic bronchoscopy. The ascending branches of the upper lobes present great difficulties, but fortunately their invasion by pins is exceedingly rare."

Pancoast and Pendergrass[59] report two cases of relatively non opaque foreign body in the lungs which were localized by means of the bilateral fluoroscope, using the Potter-Bucky Diaphragm. The Potter-Bucky Diaphragm helped to get rid of the lung density and make the foreign body more visible.

THE ESOPHAGUS

Mosher[60] continues his study of the esophagus by histological examination of 20 esophagi from babies dead at birth, two infants and 43 specimens of the adult esophagus. He summarizes his findings as follows: The esophagus may be infected before birth. Periesophageal hemorrhage has been found in premature babies born dead. In babies dying with hemorrhagic disease of the newborn, periesophageal hemorrhage has been found, as well as subephithelial hemorrhage in the esophagus and the stomach. Extensive intramuscular and periesophageal hemorrhage has been found in a baby that lived 36 hours and died of intracranial hemorrhage; in a baby whose mother had toxemia of pregnancy and in a baby born with congenital syphilis, that died of sepsis from ulcerative tonsillitis and pharyngitis. The hemorrhages were found to come from the smallest of the capillaries. The hemorrhage in babies dead at birth is probably due to prebirth toxemia. Hemorrhagic disease

of the newborn is probably due to prebirth toxemia.

Infection of the gall bladder, one of the commonest of abdominal diseases, is often associated with infection of the terminal portion of the esophagus. By causing adhesions it is one factor in developing cardiospasm. Very extensive intramuscular and periesophageal hemorrhage has been found associated with acute cholecystitis and jaundice.

Associated with fibrosis of the faucial edge of the crura, narrowing of the crural opening and constriction of the esophagus have been found.

Two cases of peri- and intraesophageal hemorrhage have been found in adults, one associated with acute infection (cholecystitis) and the other with chronic infection (multiple lung abscess).

Hallas[61] reports a case in which a toy bracelet watch swallowed by a girl, aged three, remained for a time in the esophagus, then passed into the stomach, as established roentgenologically, and appeared to have become stationary there. On gastrotomy, however, the watch was not found in the stomach, duodenum or jejunum. Renewed roentgen examination disclosed it in the esophagus, at the level of the manubrium of the sternum, where it had been cast up during anesthesia. The author easily accomplished removal with an esophagoscope while the child was still under the anesthetic. Recovery was uneventful.

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CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE-MORTEM AND POST-MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

EDITED BY RICHARD C. CABOT, M.D.
F. M. PAINTER, A.B., ASSISTANT EDITOR

CASE 18501

TWO WEEKS' HEADACHE

EYE AND EAR INFIRMARY

An Italian-American laborer twenty-three years old came to the Emergency Ward complaining of headache of two weeks' duration.

Until two weeks before admission he was well except for a cold. The headache began on the right. Later it was bilateral. Because it was so severe his physician punctured a sinus, probably the right antrum, four days before admission. That afternoon the patient was not well. The next day he was irrational, had a high temperature and was taken to a hospital. The white blood cell count was 26,000. He ran a temperature of about 106° by rectum and had some vomiting. There were no ear symptoms. A lumbar puncture was done and the patient was sent to the Massachusetts General Hospital.

Physical examination showed a well-nourished man tossing about in bed but in no pain. The respirations were deep and sighing but not rapid. He was oriented but only fairly clear mentally. He was unable to keep still more than a minute. There was no generalized tenderness. There was much purulent material in the pharynx coming from above. An incomplete neurological examination showed the movements incoördinated; apparently poor control. Finger-to-nose and heel-to-knee tests were fairly well done. The fundi were normal. There was possibly a fine nystagmus on looking to the right and possibly right ptosis. The right eye turned inward. There was complete paralysis of the right external rectus. He complained of diplopia only at times. Following the lumbar puncture a partial paralysis of the left external rectus developed. There was slight left facial weakness. The biceps and triceps reflexes and knee jerks were increased. The abdominals and ankle jerks were present.

The white cell count was 36,000. A lumbar puncture was done. Grossly purulent fluid and small pieces of pus spurted out in a steady stream. The initial pressure was over 700. A pellicle reaching to the bottom of the tube formed on standing. Jugular compression was impossible because of the viscosity of the fluid. There were 4,100 polymorphonuclears, 620 red blood cells. Alcohol and ammonium sulphate tests were very strongly positive; chloride 585, total protein 510 sugar, a very slight trace, colloidal gold 4455541443. The smear showed a Gram-positive diplococcus, probably pneumococcus.

The temperature at entry was 105°, the pulse 115, the respiration 34.

X-ray examination showed sclerosis of the left mastoid and destruction of the cell outlines in close proximity to the lateral sinuses. There was partial sclerosis of the right mastoid. The cells at the apex of the right mastoid were large and their outlines indistinct. The air cavities of the sinuses of the left side were obliterated.

An ear consultant thought the condition desperate. He advised operation but considered the chances of recovery almost nil.

On the day of admission the patient was sent to the Eye and Ear Infirmary, where operation was done that day. The following day he was irrational, with a temperature of 103.6°. Morphia had little effect in quieting his extreme restlessness. Another lumbar puncture gave findings similar to those of the first. Globulin was present, sugar absent. The colloidal gold was 0145555555. On the second day after operation the patient died.

CLINICAL DISCUSSION

DR. RICHARD C. CABOT: During the war in France we used to say, if a man has bad headaches it is always due to syphilis. They did not often have headaches during the war from other causes. Of course in private practice that is very far from being the case.

We have no record of the first lumbar puncture.

Of course meningitis is what is in everybody's mind.

They were thinking of sleeping sickness; that is why they asked about the diplopia.

I do not now remember having seen so high an initial pressure as this in spinal fluid. There were no lymphocytes at all, I take it. The colloidal gold I should say is not typical of anything, although there is a little resemblance to the syphilitic figure.

DR. GEORGE W. HOLMES: The film shows a dull left antrum as compared with the right. The dullness is fairly even throughout, more suggestive of fluid than of chronic change. We cannot distinguish between pus and other fluid. Sometimes if the antrum has been washed just before examination we may get just such a picture. He also has a dull frontal sinus on the left side. The ethmoidal and sphenoidal regions are less brilliant than normal. There is evidence of a sinusitis throughout the left side. The right antrum is also somewhat less radiant than normal. We also have dullness and partial obliteration of the cells of the left mastoid. So that we have evidence of disease with

probable accumulation of fluid in the left antrum with dullness of the other sinuses on that side and of the left mastoid.

The x-ray findings in mastoid diseases are not so positive as they are in diseases of some other parts of the body. The changes are slight anyway and may be the result of long standing rather than of acute disease. It is not always possible to distinguish between them.

DR. CABOT: I will first commit myself as best I can; then we shall ask for the operation and then the autopsy. We have to say certainly either brain abscess or meningitis. I do not know any other conditions which can give such a purulent fluid as that.

A STUDENT: If he had had meningitis wouldn't he have had pain? In other words can't you rule that out?

DR. CABOT: He ought to have more pain. I think the chief thing in favor of abscess is the way the trouble came on, namely with these lesions which Dr. Holmes pointed out, with antrum and mastoid trouble. Those things generally lead to a local process rather than to meningitis.

A STUDENT: You mean brain abscess?

DR. CABOT: I think so. Of course the spinal canal itself, the meninges must be affected. I should think we could get just as purulent a fluid as this from abscess without meningitis. But I cannot make the diagnosis between those two from the symptoms here, though it seems to me the etiology points more to abscess.

We ought to say a word about sleeping sickness. His motions, his inability to keep still and his cranial nerve paralysis are much more characteristic of that than of any form of meningitis. Cranial nerve paralysis would go very well with sleeping sickness, but I have never seen any such spinal fluid with it. He does not sleep, but not all patients with sleeping sickness do. More important than any of those things seems to me the way the disease came on, the evidence of local infection of the type we do not get with sleeping sickness. Of course the low sugar is against it.

Pneumococcus infection of the brain, probably localized, possibly not localized. I am in favor of abscess. Outside the nervous system I do not see any evidence of disease.

A STUDENT: How can you get so much pus in the spinal fluid?

DR. CABOT: It might be from pneumococcus abscess or from meningitis.

A STUDENT: Does not purulent exudate mean inflammation in the meninges?

DR. CABOT: If you are speaking of the spinal meninges of course you are right.

A STUDENT: What do you refer to as sleeping sickness?

DR. CABOT: Encephalitis lethargica. I do not refer to the African disease due to the trypanosoma.

A STUDENT: Has the paralysis any significance?

DR. CABOT: I should say it points rather toward abscess.

A STUDENT: How do you account for the fact that there are paralyses on both sides?

DR. CABOT: That is a little troublesome.

A STUDENT: Can you localize the abscess?

DR. CABOT: No.

A STUDENT: Isn't the high gold curve on the right just as good for meningitis as the high curve on the left is good for paresis?

DR. MAURICE FREMONT-SMITH: I believe that with any markedly abnormal fluid we may have any sort of gold curve.

DR. G. B. FRED: I first saw this patient at nine o'clock in the evening. Possibly the findings of the ear and nose might help in making a diagnosis. The right drum showed a normal picture. The left drum was grey and had all the normal landmarks present. It was moderately retracted and had a healed perforation in the posterosuperior quadrant. He could hear in either ear when his attention was aroused. There was no tenderness or edema over either mastoid or over any of the sinuses. On account of the grey, almost normal ear drums I considered the x-ray of the mastoid as showing an old healed mastoid condition without any acute condition present at this time, especially with no history of any ear condition. I think if Dr. Cabot had seen the patient he would have been perfectly satisfied that it was an acute meningitis. The patient had a very stiff neck, was very restless, with knee jerks exaggerated, and the spinal fluid count showed that there was a meningitis. Therefore the thing to do was to look for the cause of the meningitis. I considered that the mastoid condition could cause this meningitis or brain abscess, either or both, but wanted to look for a more evident cause.

On shrinking the nose we found mucopurulent pus on the floor of the right nostril and on that of the left nostril, and a small but definite amount of pus in the left middle meatus. There was no tenderness over any of the sinuses. The patient's condition was desperate. He would have died without operation, but we thought he might have a small chance with operation, so I decided to do a left external frontal sinus operation.

A Killian incision was started on the left through the eyebrow and curved downward between the root of the nose and the inner canthus. We separated the periosteum from the bone, and entered the floor of the left frontal sinus. Immediately we encountered a very large amount of thin pus under pressure. The mucous membrane from the frontal sinuses was thickened and very edematous. I took that out, also the entire anterior wall of the frontal sinus, in order to get a good look at the posterior wall of the frontal sinus, in the hope that some lead

to the dura might present itself. No lead was detected. Nevertheless we took off the posterior bony wall of the sinus. The dura was essentially normal but tense. I decided not to open the dura. The ethmoids were then extenuated. They were found to be soft, full of pus and contained polypoid membrane. On account of his poor condition I did not enter the sphenoid on the left side. The wound was left wide open.

BACTERIOLOGIC REPORTS

Culture from the spinal fluid at the Massachusetts General Hospital showed streptococcus viridans. Culture at the Eye and Ear Infirmary showed a Gram-positive diplococcus.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Meningitis.
Frontal sinusitis.

DR. RICHARD C. CABOT'S DIAGNOSES

Acute pneumococcus infection of the central nervous system, with brain abscess or meningitis.

ANATOMIC DIAGNOSES

1. *Primary lesion.*
   Pansinusitis.
2. *Secondary or terminal lesions.*
   Acute meningitis, pneumococcic.
   Ependymitis.
   Cavernous sinus thrombosis?
3. *Historical landmark.*
   Operative wound, left frontal sinus and ethmoid cells.

PATHOLOGIC DISCUSSION

DR. TRACY B. MALLORY: We found at autopsy a meningitis which was most marked on the inferior surface of the midbrain and cerebellum, which were covered with a thick dense exudate. There was a slight purulent exudate which extended up over the cerebral hemispheres, but that was less marked. There was also a slight degree of ependymitis within the left ventricle. The left frontal sinus and the ethmoid on that side were opened at operation, as you have heard. The other frontal sinus, the remaining ethmoid cells and the sphenoidal sinus all contained a definite infectious exudate at autopsy. So that we have evidence of an acute pansinusitis, more marked on one side than on the other.

It is not at all rare for sinus infections to become generalized and involve two or more and sometimes all the sinuses simultaneously. From the point of view of therapy, if one has the luck to catch these cases earlier than was done in this case it is well worth remembering that because one finds pus in one sinus it does not pay to be content with that without looking carefully for possible multiple sinus infections.

CASE 18502

A COMPLICATION OF SPLENECTOMY

MEDICAL AND SURGICAL DEPARTMENTS

PRESENTATION OF CASE

DR. DAVID A. YOUNG*: This patient was a thirty-three year old Canadian housewife who came in with the chief complaint of a mass in the region of the spleen.

Three years before entry she noticed an egg sized mass in the left upper quadrant which slowly increased in size and was more noticeable at the time of a normal pregnancy six months before entry. There was some distention and a feeling of gas in the stomach. Other than that there were no symptoms and she was perfectly healthy.

She was a foundling and stayed in a Home in childhood. She was seen in the Eye and Ear Infirmary at eighteen with acute interstitial keratitis. Following that she received antiluetic treatment for six years. She was then married and received another course of antiluetic treatment.

Physical examination at entry showed a rather slender person. The heart was enlarged. There was a typical murmur of mitral stenosis. She also had a rather small liver. The edge was felt one inch below the costal margin. On the left side she had a firm, slightly enlarged irregular spleen, which was felt just a little below the umbilicus. She was a bit pale and had a hemoglobin of 65 per cent. The red cell count was 3.8 million and the white count 3,000 on admission, with decreased platelets. Repeated white counts showed persistently low figures, varying from 2,000 to 3,000. Her differential remained normal, with some decrease in platelets. The reticulated cells were .2. The urine was negative. The stools were negative. The Hinton was negative. The clotting time was increased to 35 minutes. There was 10 per cent retention by liver function test. The icteric index was 20, the van den Bergh 1.5. The platelet count varied according to two counts between 4,713 and 128,300. A blood culture was negative. A fragility test was normal. The clotting time came down to 23 minutes. The bleeding time remained about two minutes. She also had a Congo red test, which was negative.

On x-ray examination the heart was enlarged and was considered probably rheumatic. The diaphragm was high. There was homogeneous dullness in the right mid-lung field and some mottling in the lower lung field. The heart was not displaced. The diaphragm on the left side was elevated. In the chest plate there was an area of dullness at the right first rib, but that was thought probably to be due to an artefact.

She was transfused once and was seen by several consultants before being transferred to the Surgical service.

*Senior interne on the East Medical service.

DR. GEORGE A. MARKS‡: Immediately after the operation her course was one of pulmonary complications with definite signs in the chest. Her temperature went up to 102° and stayed at that level long after the signs in her chest had diminished. The pulse rate came down to a level of 80 to 90. The first white count after the operation was 24,000, in contrast to the leukopenia which she had before the operation. For the next two weeks after operation her temperature stayed between 100° and 102°. By this time she felt perfectly well. The pulmonary complications subsided and she was the picture of perfectly uneventful postoperative convalescence except for her chart, which was constantly elevated. She had frequent white counts, all elevated, between 18,000 and 24,000.

About twenty days after the first operation she began to develop mild symptoms of distention and at the same time vomited occasionally, not very much, but enough to show that she was a little upset. The distention slowly increased until about the twenty-sixth day after the operation. During this time a moderately tender mass was discovered in the right lower quadrant. There was no spasm of the musculature over it. On the day of operation the mass in the right lower quadrant felt like an indurated tube. Her temperature, which had shown a tendency to be slightly elevated, dropped a little. The white count was still high. At this time, when the mass was perfectly palpable, she showed pretty definite signs of complete obstruction. Exploration was done and a very interesting pathologic condition found. The patient went steadily downhill after the operation. Two days later she became intensely cyanotic and died.

CLINICAL DISCUSSION

DR. BETH VINCENT: I do not recall some of the details of the abdominal findings. I think it would be interesting to read the description of the operation.

"There was free fluid in the abdomen. The liver was entirely cirrhotic, small and nodular. Both lobes were involved in this process. The spleen was enlarged, adherent and the capsule was thickened. There were many large vessels in the adhesions between the surface of the spleen and the diaphragm and the abdominal wall. These adhesions were divided and the spleen was removed. During the process considerable bleeding was encountered. After removal of the spleen it could be seen that there was very free collateral circulation in the veins of the posterior abdominal wall."

The findings are consistent with cirrhosis, with splenomegaly or with the splenomegaly of splenic anemia that had gone on to Banti's third stage. Does the pathology throw any light on this question?

DR. TRACY B. MALLORY: Not very much.

‡Resident on the East Surgical service.

NOTE BY DR. E. PARKER HAYDEN: Dr. Vincent discussed this case with me the day before the second operation, as he was to be away for a week. It was his feeling that it would probably be necessary sooner or later to explore her abdomen, since she was not improving and there was a questionable right lower quadrant mass. The following day, when I examined the patient, the mass was easily palpable as a cylindrical affair extending diagonally downward and medially in the right lower quadrant, within the peritoneal cavity, and becoming less distinct at each end, exactly as one would expect it to feel in the light of the future findings. I did not appreciate its true nature before operation, and though there was little in the mode of onset to suggest acute appendicitis, that seemed to be the best diagnosis to fit the physical signs.

At operation the mass proved to be a convex loop of ileum, dusky and edematous to a degree which held it pressed against the anterior abdominal wall much as a rubber hose would press toward the convexity of its curve. Small thrombosed veins were visible near the mesenteric border, and the entire mesentery was thickened. These findings, together with the presence of free, clear fluid in the peritoneal cavity, made the diagnosis of mesenteric venous thrombosis unquestioned. Arterial pulsation was present at the border of the gut. I did not consider a resection safe or advisable in view of the patient's condition and the uncertainty as to the extent of the thrombosis. Therefore the abdomen was quickly closed after aspiration of the fluid.

DR. VINCENT: Always after removal of the spleen in splenic anemia the dreaded complication is a thrombosis of the mesenteric veins, but it is often difficult to make the diagnosis. It is suggested when the patient runs a persistent temperature, unaccounted for, has a high white count, has any disturbance of the bowel movements, either diarrhea or constipation, and abdominal pain, which was present in this case in the right lower quadrant. The question arose as to whether she had appendicitis.

We have had a few of these cases of thrombosis after splenectomy, all of which have terminated fatally. In some of them in the terminal stages it is possible to feel a mass in the abdomen. When the abdomen is opened it is apparent that this mass is a coil of firm, thickened, edematous small intestine that results from the disturbance of the circulation due to thrombosis of the mesenteric veins. I do not know what causes the thrombosis in these cases. It seems to take place more often after splenectomy than after any other operation. Possibly ligature of the pedicle causes an ascending thrombosis in the splenic vein which extends upward in the portal system until the veins are involved that come from the mesentery of the small intestine. We have never made the

diagnosis here in the early stages, and when we have been able to make the diagnosis, of course, the condition has been such that no operative procedure could be effective.

DR. CHESTER M. JONES: It is of interest that there is a patient in the wards now who had a splenectomy a short time ago and since operation has developed diarrhea and abdominal pain. The chances are that she is going through exactly the same condition, a low grade mesenteric thrombosis. I am wondering if one cannot explain the thrombosis as being due to the fact that the blood stream is filled with very large numbers of platelets and if that does not produce the formation of thrombi at one point or another.

CLINICAL DIAGNOSES (FROM HOSPITAL RECORD)

Congenital lues.
Splenic anemia.
Acute enteritis.
Acute acidosis.

ANATOMIC DIAGNOSES

(Splenic anemia.)
Operative wound, splenectomy.
Thrombosis of the superior mesenteric vein and its radicles and of the portal vein and the splenic vein.
Acute hemorrhagic enteritis.
Old atrophic cirrhosis of the liver.
Passive congestion of the spleen.
Multiple emboli of the lungs.

PATHOLOGIC DISCUSSION

DR. MALLORY: There was an article from Mt. Sinai a year or two ago claiming that one could predict before operation whether or not postoperative mesenteric thrombosis was apt to occur after the spleen was removed. If the platelets were low proportionately, thrombosis did not usually occur. In cases where the platelets were high, one was almost certain to get mesenteric thrombosis. This case had very low platelets before operation and nevertheless developed a mesenteric thrombosis.

At the autopsy we found a complete thrombosis of the superior mesenteric vein filling all the radicles of that vein and also extending up into the portal vein and the splenic vein. The entire thrombus seemed to be of relatively recent origin. If this case had been a primary thrombus of the splenic vein the chances are we should have found some evidence of old thrombus, whereas we found nothing but a fresh one. In retrospect it seems very definite that she had a long standing, very old, atrophic cirrhosis of the liver and secondary splenomegaly. Even though she did show the low white count and mild secondary anemia of the Banti's syndrome, I believe that the cirrhosis was primary in this case.

Secondary to the thrombosis of the mesenteric vein nearly four feet of gut was markedly edematous, discolored, and almost on the verge of gangrene.

This is the mucosa of the involved portion, showing almost complete hemorrhagic necrosis with, however, relatively little involvement of the muscular and serous layers. All the small veins are congested, but the thrombus does not appear to have extended down into the veins of the intestinal wall itself. In another area however the walls of all these little vessels stain blue-black and are obviously necrotic, although there are no definite thrombi within them.

The liver shows a well marked atrophic cirrhosis, presumably of the toxic type. It would be difficult to rule out the effect of the congenital lues in this case. That may have had something to do with the cirrhosis. It is also quite possible that antiluetic treatment caused it.

The spleen showed nothing in particular except dilatation of all the sinusoids with a little fibrosis, the usual signs of chronic passive congestion such as one gets in the average case of cirrhosis.

Her final attack was one of pulmonary embolus. We found a number of small emboli and infarcts scattered throughout the lungs. Of course the source cannot have been the mesenteric vessels because the emboli could not get through the liver. There must have been thrombi elsewhere in the body from which the pulmonary emboli broke loose. We did not succeed in locating them however.

DR. WYMAN RICHARDSON: Was there any sign of an old lesion? This patient was transferred just after I came on service, but I remember that when I saw her after her first operation she had definite signs in her lung. Although I interpreted those signs as being due to a bronchopneumonia, she may have had an embolus at that time.

DR. MALLORY: No, we did not find any infarcts which looked as if they could have been present for more than a few days. There was an interval of nearly three weeks.

DR. GEORGE W. HOLMES: I should think that in these cases of questionable mesenteric thrombosis a film of the abdomen would give some facts of diagnostic value. The portion of the gut supplied by the thrombosed area ought to be dilated.

DR. MALLORY: It was noticed that the affected portion was entirely free from fecal contents at least.

DR. FULLER ALBRIGHT: It strikes me that if this is a complication that is particularly likely to occur after taking out the spleen it might be wise to give these patients water by mouth. Obviously the amount of blood flowing through the mesenteric veins must be increased if fluid is being taken by mouth. Now we depend very much postoperatively on getting all the fluid in by subpectorals and intravenously. It may be a good idea to give them fluid by mouth to get the blood flowing through the mesenteric veins if there is a chance of thrombosis.

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WHAT ARE THE QUALIFICATIONS FOR THE PRACTICE OF MEDICINE IN MASSACHUSETTS?

IT is sometimes said that the qualifications for the practice of medicine in Massachusetts are the lowest in the United States. If this is true, it does not appear upon reading the statutes on this subject in the various jurisdictions. In some states the law is fairly explicit as to a minimum standard; in others the law sets no standard, but leaves the matter to the discretion of the board. Thus rulings by the board have the force of law. In any such case the board might set the worst possible standards (or none at all). How would these then compare with the Massachusetts standards? What are the Massachusetts standards?

In this Commonwealth the candidate must be twenty-one, of good moral character and have had an education equivalent to that required for graduation from high school. He is then ready for a medical school. He must have a diploma from a medical school that is legally empowered to confer a degree in medicine, and the school must give a full four years' course of not less than thirty-six weeks in each year. In North Dakota the school must be reputable, and the student must have attended it for four years of eight months each. In Oregon the school must give the course and the candidate must have pursued it and have graduated from it. Utah goes to what would be considered in Massachusetts an unjustifiable extreme by insisting that the candidate give evidence of "actual school attendance and study" (!) in the prescribed courses.

In Massachusetts the statutory specific requirements are minimum. This is in line with the most approved legislative procedure, and, in spite of obvious deficiencies in other respects, Massachusetts has not suffered from the restrictions which in some other states have actually hampered reasonable experimentation in medical education. Yet some specific minimum requirements are reasonable and in many states are at the discretion of the board. They should be so in Massachusetts.

There are at least two defects in the law. As the result of one of these defects, the four years' course of not less than thirty-six weeks in each year required of the school is not required of the candidate; perhaps attendance is not expected, and certainly no formal study of medicine is required. If the candidate is able to pass the examination, he is regarded as qualified to practice.

Another curious defect in the law is that it makes provision for dealing with fraud on the part of the candidate in connection with the qualification for examination, or during the examination, but it fails to take cognizance of the existence of a diploma mill. If a legally chartered medical school, duly empowered to confer degrees in medicine chooses to confer such degrees for financial consideration only, or for financial consideration with mere paper representation of medical study in some other institution which may have refused to confer the degree, the diploma is accepted on the same basis as the earned degree. That is to say the mere possession of a diploma is innocently accepted as a qualification.

Since medical schools are as they are, some well qualified, some poorly qualified, the qualifications which must be fulfilled by the candidate in accordance with the Massachusetts law are not really adequate. They should be changed so that they more nearly conform to generally accepted standards. The law in Oregon reads "The board shall have full power . . . . to bring the standard of requirements . . . . up to such standards in other states."

Actually boards of registration in medicine with discretionary power of approval have been aware of what is going on in other states and in medical education, and have endeavored to improve the standards of medical practice in

accordance with the need of the public. In assisting in this improvement, the Massachusetts Board of Registration in Medicine is almost powerless.

APPRAISING THE CHILD

As a result of continuous investigation into the many problems of child health and welfare, it has become increasingly apparent that a better knowledge of the normal is necessary as a base line. The old standards of weight for age and height, unlike Chesterfields, no longer satisfy. They were a necessary stage in the development of practical, clinical anthropometry but their inadequacies and their injustices are now well recognized. It is no fairer to say that two boys of a given age and height should fall within a certain per cent of an average weight than to say that they should wear the same sized shoes or the same height of collar. Averages do not represent the normal; they are the apotheosis of mediocrity.

Inheritance of body build; racial characteristics; habits of living, all introduce variable factors which serve still further to impugn the deification of the average. Von Pirquet some years ago recognized the factors of error and introduced the stem length as a basis for measurement; his pelidisi consisted of the ratio between the cube root of the weight and the sitting height multiplied by ten. This is of little greater practical value than the older methods of height and weight, for they all fail to take into account body breadth and bony thickness.

A recent practical effort to arrive at a more satisfactory appraisal of the individual has been published in *The Journal of Pediatrics*, (Vol. I, No. 5, November 1932) by William Palmer Lucas and his associates. In this study the measurements are based on an index of build obtained by dividing the diameter of the crest of the pelvis by the height. Obviously a low index means a slender child with small bones and a high index means a broad child with large bones. Average weight, corrected to this index, gives "ideal" weight for the individual. It has long been known that the time table of epiphyseal union is correct unless something has happened to the individual to throw it off schedule; consequently we have in the calcification of the skeleton our best index of normality of development. In appraising the individual child the thickness and quality of subcutaneous tissue and the girth and quality of muscles are of great significance.

For ordinary usage Faber, of San Francisco, has devised a height and weight table which gives approximate permissible ranges of weight for normal children. The sound advice is given, in respect to this table, that children whose weights are within the normal range are not necessarily free from physical defects, nor are the others necessarily physically defective, and the advice is probably needed.

THE HIGH POINTS IN THE RECOMMENDATIONS OF THE COMMITTEE ON THE COSTS OF MEDICAL CARE

On page 1073 of this issue we present the text of the address delivered by Dr. Ray Lyman Wilbur at the meeting in the New York Academy of Medicine November 29, 1932. On this occasion the final report of the Committee on the Costs of Medical Care was released.

Dr. Wilbur served as Chairman of this Committee throughout the five years of its existence and hence speaks with authority in his interpretation of the recommendations of the majority of the Committee.

An effort has been made to discredit the work of this Committee by the Editor of the *Journal of the American Medical Association* in the issue of December 3.

We suggest a careful consideration of the substance and spirit of Dr. Wilbur's address in comparison with the construction and temper of the editorial in the *Journal of the American Medical Association*. In subsequent issues of this *Journal*, the texts of the addresses of Professor C.-E. A. Winslow, Dr. Lewellys F. Barker and Dr. N. B. Van Etten which were also delivered at the meeting of November 29 will appear.

These several addresses will set forth the essential conclusions of the Committee as they appear in the majority and the largest of the minority reports.

With the completion of this series there will be certain editorial comments.

COÖPERATION BETWEEN TRUSTEES AND MEDICAL STAFFS OF HOSPITALS

The communication from the secretary of the Medical Society of New Jersey as presented on page 1112 of this issue is of interest to the medical profession of the entire country. Although the duties of boards of trustees of hospitals are concerned largely with business management, they sometimes make mistakes regarding the fitness of members of their medical staffs to serve hospitals acceptably. It has been a custom in this vicinity to have at least one medical man a member of a board of trustees of a hospital, to advise the board respecting the qualifications of members of the medical staff. Such a plan has much to recommend it. It is possible to have more than one medical member. However, it is unthinkable that trustees should disregard the counsel of the medical staff in making appointments to that staff, or in determining the medical policy of the hospital.

WILLIAM SYDNEY THAYER (1864-1932)

THE sudden death of Dr. William Sydney Thayer of Baltimore, December 10, in Washington, takes from American medicine one of its leading and most respected figures. An able investigator, superior in diagnosis and teaching, Thayer will long be remembered as Osler's assistant in the early days at the Johns Hopkins Hospital and, subsequently, as Osler's successor to the chair of medicine in Johns Hopkins University. For many years after Osler's resignation, Thayer carried on in the true Oslerian spirit, which had initiated a new era in American, and even in world-wide, medicine. No one was more devoted than pupil to master, and many of Thayer's most delightful addresses deal with Osler or the Oslerian inspiration. The greatness of the man was clearly shown in an address given at the opening of the Osler Library at McGill in 1929; carefully prepared and documented, gracefully and charmingly delivered, Thayer, the worthy pupil of a great man, was at his best. Equally important, however, is another paper, given under different surroundings. Thayer was honoring another great man, Richard Bright, when, as Bright medallist at Guy's Hospital in 1927, we find him reading to a brilliant audience a delightful summary of Bright's life, with all its ups and downs, its sunlight and shadows, in his inimitable manner.

In clinical medicine, Thayer, a product of New England and a graduate of the Massachusetts General Hospital, did some excellent work on malarial fever (1895-1897) and bacterial endocarditis (1925). He was well known in the South as a consultant, and even this summer he often walked the wards of the Johns Hopkins Hospital with his younger colleagues. During the Great War, although far from a "soldierly" man, Thayer served on the American Red Cross Mission to Russian and as chief consultant in medicine to the American Expeditionary Forces, with the rank of Brigadier General. For many years, until the time of his death, he was on the Board of Overseers, Harvard College.

Thayer's interests were broad. He wrote creditable verse, served as president of Phi Beta Kappa and received many honorary degrees both in this country and abroad. A charming, witty conversationalist, although a restless, energetic spirit, he was greatly beloved by his colleagues. His admirable papers on historical subjects, read in a manner of thoughtfulness and ease of presentation, endeared him to many physicians with historical interests. To know such a man was to add something to one's own stature, for he radiated all that was good and stimulated others to follow in the pathway of the Great Physician.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

MCGINN, SYLVESTER. A.B., M.D. Harvard University Medical School 1929. Dalton Fellow, Cardiac Clinics and Laboratory, Massachusetts General Hospital. Address: Massachusetts General Hospital, Boston. Associated with him is

WHITE, PAUL D. A.B., M.D. Harvard University Medical School 1911. Physician, Massachusetts General Hospital. Instructor in Medicine, Harvard University Medical School. Address: Massachusetts General Hospital, Boston. Their subject is "A Follow-Up Report on the Clinical Study of Two Hundred and Fifty Cases of Cardiac Asthma and a Survey of an Additional Group of Twenty-Two New Cases." Page 1069.

WILBUR, RAY LYMAN. A.B., A.M., LL.D., Sc.D., M.D. Cooper Medical College, San Francisco, 1899. Chairman, Committee on the Costs of Medical Care. Ex-President, American Medical Association. His subject is "The High Points in the Recommendations of the Committee on the Costs of Medical Care." Page 1073. Address: 910 Seventeenth Street, Washington, D. C.

BURGESS, ALEXANDER M. A.B., M.D. Harvard University Medical School 1910. Visiting Physician, Rhode Island Hospital. Physician-in-Chief, Medical Department, Charles V. Chapin Hospital and Miriam Hospital. Chairman of Division of University Health and Assistant Professor of Biology, Brown University. Address: 454 Angell Street, Providence, Rhode Island. Associated with him is

BURGESS, ALEXANDER M. JR. Address: 454 Angell Street, Providence, Rhode Island. Their subject is "A New Method of Administering Oxygen—A Preliminary Note." Page 1078.

KICKHAM, CHARLES J. M.D. Tufts College Medical School 1908. F.A.C.S. Surgeon-in-Chief, Department of Obstetrics, St. Elizabeth's Hospital. His subject is "Complications of Pregnancy as They Affect the Maternal Nervous System and Bony Pelvis." Page 1082. Address: 524 Commonwealth Avenue, Boston.

SCHALL, LEROY A. M.D. Jefferson Medical College 1917. F.A.C.S. Associate Surgeon, Massachusetts Eye and Ear Infirmary and Massachusetts General Hospital. Assistant Laryngologist, Collis P. Huntington Hospital; Palmer Hospital; Newton Hospital; Robert B. Brigham Hospital. Consultant Otolaryngologist, United States Marine Hospital No. 2. Visiting

Surgeon, New England Peabody Home for Crippled Children. Instructor in Laryngology, Harvard Medical School. His subject is "Progress in Laryngology." Page 1088. Address: 270 Commonwealth Avenue, Boston.

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ELIE METCHNIKOFF

1845-1916

So much that has proved to be vital in medical progress has been contributed by the devotees of pure science that it is important for us to cherish the memory of those to whom the world owes so much. The mystery which so long surrounded the protective mechanisms of the body, mechanisms that defend it from the inroads of disease, so long as they are not vitiated by transgressions against the laws governing their activities, was materially lessened by the researches of Elie Metchnikoff. His was a singularly sensitive nature, the product, to a considerable extent, of the environment of his youth and the obstacles, real or fancied, that confronted him for so many years before he finally found opportunity for the pursuit of his ideal, long cherished and persistently pursued. His father was an army officer, intellectually brilliant but with a skeptical turn to his mind which stood in the way of his accomplishing that which his talents might otherwise have enabled him to achieve. His wife, who brought him a considerable dowry, was a kind-hearted, beautiful woman and by her he had four children, of whom the youngest, Elie, was born at Panassovka in the province of Kharkoff, in Little Russia, on the sixteenth of May, 1845. To this place the family had removed after their fortune had been pretty well dissipated by the gay life of an army officer in St. Petersburg. It was largely to recoup his fortune that Elie's father secured this billet in Little Russia and here he gave himself over to cards and the indulgence of his Epicurean tastes, interspersed with excursions to St. Petersburg to convoy horses that he had raised or purchased. He became less and less a companion for his children, their care and education being left to their mother, and so long as she lived she enjoyed the confidence of her youngest son. Elie was not a rugged child and had a great deal of trouble with his eyes. Because of his ill health he was spoiled and allowed to have his own way, which had unfortunate, but not unusual, effects upon his disposition, effects which he was slow to overcome when he became of age. After he was old enough to profit by the instruction of tutors he received the preparation for the Lycée by well-selected private instructors, one of whom inspired in Elie his fondness for natural history. This began when he was eight years of age and from that time he devoted his energies to collecting, and his money in procuring books on this subject. Though it is probable that the incentive to devote himself to the pursuit of science is to be attributed to his tutor, Hodounoff, it is also true that on both sides of his family there were many talented individuals among his ancestors. In the Lycée, as a student, he made rapid progress and soon was carrying off scholastic honors. The books he read and the minds that had the greatest influence upon him were those that cultivated ideas "taboo" in the Russia of that day, viz., scientific speculation. These had a strong claim upon his interest and he always shunned those subjects in which he could see no profit, countenancing them from compulsion only. He early evinced a fondness for music which was a passion with him all his life. While he was still in the Lycée he, in collaboration with another student, spent an entire year in translating Grove's "Unity of Physical Forces" and published his first article, a review of a textbook on Geology, in the *Journal de Moscou,* when he was sixteen. He completed his course at the Kharkoff Lycée, where he won the much coveted gold medal, in 1862. He made a futile excursion to Germany hoping to find opportunity to study zoölogy with Kölliker, in Wurtzburg, but it was the holiday season and he was too lonesome to endure the tedium of waiting for the University to open, so he returned to his home. One or two love affairs at this impressionable age upset him to some extent but he finally was forced, against his wishes, to enter the University at Kharkoff, at that time a very unprogressive institution. There were only two men on the faculty that were master-minds, one a physiologist and the other a chemist. For a time he had a leaning toward medicine but was discouraged from taking it up by his mother, who realized that he was not temperamentally fitted for that profession. He was desirous of undertaking research work and was encouraged to do so by the professor of physiology. He came across Darwin's origin of species about this time and was so strongly impressed by it that he set himself to the task of establishing genetic connections between isolated forms of Rotifera and certain of the Nematode group of worms. His dissatisfaction with the atmosphere of Kharkoff led him to drop his scientific researches at the end of his first year and by intensive work he covered the requirements for a degree in one more year, except for his licentiate's thesis. This was in 1864. He gathered materials for this thesis at Heligoland and Giessen where he did some work with Leuckart who treated him shamefully, publishing Metchnikoff's researches as his own. This so incensed him that he left Giessen, obtained a grant of 1600 roubles for a year from the Russian Ministry of Public Instruction and made his way to Naples. Here he became acquainted with Kovelevsky, a man after his own heart, with

whom he established a lifelong intellectual friendship. Both were interested in the study of comparative embryology and it was from the studies begun here at Naples with Kovelevsky that Metchnikoff laid the foundation for his later work on phagocytosis. His first stay in Naples was interrupted by an epidemic of cholera which drove him out of the city and he spent some time in Göttingen and Munich pursuing his zoölogical investigations and taking advantage of the opportunities afforded by residence in Germany to perfect his knowledge of music. War having broken out in Germany, he made his way back to Naples where he resumed his studies. He applied for and received the appointment at a new University at Odessa to which he was attracted by the opportunities offered to study the flora and fauna of the Black Sea district. He formed some scientific affiliations here but his temperament was such that he could not get along comfortably with his confrères and he accepted an appointment to a chair in zoölogy at St. Petersburg where he had been well received at a Congress of Russian naturalists and where he had been awarded the Baer prize, in conjunction with his friend Kovelevsky. Not being able to secure for himself the laboratory facilities he desired at St. Petersburg he abandoned his position there, overwhelmed with disappointment and in a state of extreme pessimism. It was at this juncture that he became enamored of Mlle. Fédorovitch who nursed him through a minor illness and to whom he was shortly married. This ended in tragedy as she was a tuberculous subject when they were married and his scientific work was interrupted by the necessity of providing for her care, which eventually led to removing her to Madeira where she subsequently died. Overcome by this catastrophe, and being at the time much afflicted by his eye troubles, he sought release through suicide but was defeated in his purpose because of ignorance of the effects of an overdose of morphine, which was the agent he employed. A chance zoölogical observation at this time turned his thoughts away from his troubles, centered his interest in science and brought him back to a normal mental state.

Recurrence of his eye trouble made it impossible to continue his microscopic work and he turned to anthropology, making an excursion to the Kalmuks, a primitive people, where he hoped to apply the same principles of study that he had been following out embryologically. The results of this expedition he presented to the Anthropological Society of Moscow. Impressed more strongly than ever with an idea he had long entertained, viz., the desirability of training a girl in accordance with his own ideas and then marrying her, he selected the daughter of a neighbor, a woman much younger than himself, who he learned was interested in natural history studies and offered to become her tutor. In the course of a short probation period as her suitor-tutor he obtained the consent of her parents to their marriage which was celebrated in February, 1875 and from that date a sympathetic and helpful companionship was established which continued until his death. It is from the "Life of Elie Metchnikoff," written by his wife, that this account is largely epitomized. Teaching at Odessa and public life occupied his time from 1873 to 1882 at which latter date, on account of the turmoil, social and political, occasioned by the assassination of the Tsar, Alexander II, conditions at the University of Odessa became so intolerable that he resigned his position there. The period had been occupied with zoölogical investigations upon the unity of origin of multicellular beings and also concerning intracellular digestion, both of which researches were leading up to promulgation of his ideas on phagocytosis. In 1881 and 1882 his wife's parents both died and he was obliged to devote himself to the administration of two landed estates, an occupation so foreign to his training that ultimately he was glad to escape from the care of the properties and return to his scientific studies, which he resumed at Messina in the autumn of 1882. His researches here tended to confirm more and more strongly his conviction that the mesoderm of the embryo, in certain lower genera, possesses digestive functions. At Messina a most important transition occurred in his career, for he became transformed from a zoölogist to a pathologist, and here it was that he obtained the first clue to his subsequent contributions on immunity. He was studying certain mobile cells in the larva of a starfish when it occurred to him that such cells might be summoned to the defense of the organism against intruders. He introduced a rose thorn beneath the skin of his starfish larva, only to find it, a little later, covered with these mobile cells, a situation quite analogous to what occurs in man when he runs a splinter into his finger and shortly finds it bathed in fluid in which are numerous white blood corpuscles which are mesodermic in origin, i.e., they come from an embryonic layer of cells one of whose functions, in the lower orders, is digestion. He showed his work to Virchow, Kleinenburg, and later to Claus in Vienna, all of whom thought well of it and encouraged him to publish his observations. The name given to the cells which he conceived to be defense organisms was derived from a Greek word meaning "devouring cells". The first publication of this work was in 1883. He presented a paper on the subject before a congress of physicians and naturalists at Odessa during this same year. This naturally led to the extension of his studies to mammals and the behavior of phagocytic cells toward fungi in the lower orders of life, and later toward bacteria in man. At this time he was unacquainted with bacteria. Further

studies were carried on at Tangier, Trieste and Gibraltar. Just at this time (1886) Pasteur's work on rabies was published and a bacteriological institute was established at Odessa for the preparation of vaccine for the treatment of this disease. Metchnikoff was appointed Scientific Director of this laboratory, but he retained the post for only a short time as the conditions were unfavorable for work.

In 1887 he visited Wiesbaden and Munich where he became convinced that he could not do good work, his theories as to phagocytosis and immunity having aroused considerable opposition, particularly in medical circles. From Munich he proceeded to Paris to gratify a long-felt desire to meet Pasteur, who received him most kindly and offered him a laboratory in the New Institute, then building. Koch and his followers greeted him and his work coldly. After returning to Odessa he took steps to turn over his directorship to others and complete his plans to leave Russia permanently. This he did in 1888. To his great delight he was soon pleasantly located in a properly equipped laboratory outside the distractions of politics and public duties, in an atmosphere conducive to scientific work, and connected with an institution renowned for its investigators and for the value of their achievements. The next twenty-eight years witnessed great changes in his own character and were a fitting climax to the distractions of his earlier experiences.

Having espoused the cause of pathology, Metchnikoff had entered a field of controversy that was to continue for the next twenty-five years, during a goodly portion of which he was to be taxed to the utmost to defend the theory he had set up. One after another, by an ever-progressive series of experiments he met and disposed of the arguments of the objectors. Emmerich, Behring, Baumgarten and Koch denied the validity of his hypotheses, but gradually his views gained credence in France and England though the Germans held out in opposition. At the Berlin Congress of 1890 Lister gave him the encouragement of his approval and at a subsequent Congress in London his phagocytosis theories won many adherents. To Metchnikoff's mind Behring's discovery of antitoxins was the most serious menace to be overcome and through many years, and only after a series of complicated experiments, was he able to show that there was nothing antagonistic in the two ideas. In 1892 he published a volume entitled, "Lessons on the Comparative Pathology of Inflammation," in which he demonstrated the importance of Natural History as applied to medicine. To effect a practical acceptance of his conception of immunity he was obliged to prove it applicable to the higher orders of beings and accordingly he carried his experiments over into the infectious diseases of man, which led to experiments upon himself and his co-workers with the cholera vibrio. At the Budapest Congress of 1895 he came into conflict with Pfeiffer who had brought forth new observations in favor of the extracellular destruction of bacteria. By further experimentation Metchnikoff was able at the Moscow Congress in 1897 to explain the rôle played by phagocytes in the neutralization of the effects of toxins and supported this contention by a paper which dealt with studies on the Plague. The work that thus reconciled Pfeiffer's observations with Metchnikoff's theories was done under the latter's direction by some of his pupils, notably Salimbini, Bordet and Roux.

In 1900, at the International Congress held at Paris, he was ready to make a final exposition of his deductions upon Immunity and wrote his book entitled "Immunity in Infectious Diseases", in which he traced the process up from unicellular organisms to man, discussing the phenomena of chemiotaxis, the influence of "habit" in artificial immunity, the behavior of digestive ferments and their origin and the part played by "fixators" or "amboceptors", ending with the conclusion that "immunity in infectious diseases is linked with cellular pathology, viz., with the phenomena of the resorption of morbid agents through intracellular digestion".

A series of disquieting events,—illness in his and his wife's immediate family, an agricultural crisis in Russia involving the family property and, finally, Pasteur's death in 1895,—preyed upon his health and aggravated a pre-existing cardiac trouble which caused him to worry about his own capacity to complete the work he had outlined for himself. He had for some time been speculating upon the causes of senescence and his studies of fermentative disturbances in the large intestine led him to the conclusion that the infirmities of old age were due to chronic intestinal poisoning. He formulated his ideas on this subject in an address he made at Manchester on the "Flora of the Human Body." He worked out a diet to which he adhered during the remainder of his life. In following it he avoided raw food and used sour milk freely, the purpose of which was to limit the activities of the bacterial flora of the intestine. He came to regard the large intestine as a biologically useless appendage for man; a left-over from our mammalian ancestry. He collected his philosophical ideas upon man's place in nature in a volume entitled "Etudes sur la Nature Humanine."

His active mind was still diligently seeking the solution of many problems suggested by his philosophical reflections upon the causes of senility and he sought to solve the relation of some of these questions, such as syphilis and arteriosclerosis. In 1908 he received the award of the Nobel Prize, together with Ehrlich, for their researches on immunity. He also busied

himself with investigations upon immunization against typhoid fever and cholera and wrote some articles in which he sought to bring the advances made by Science before the lay mind. In 1911 he undertook, for him, a very hazardous expedition to the Kalmuk Steppes to ascertain, if possible, why the Kalmuks, who lived in a territory free from tubercle bacilli, were so susceptible to this infection when once they were exposed to it. His conclusion was that these primitive people owed their susceptibility to tuberculous invasion to the fact that they had never been exposed to any natural vaccination against the disease.

The most altruistic of men, he did not escape a considerable amount of hostile criticism because he was at one time persuaded to lend his name to a commercial enterprise connected with the manufacture and sale of a lactic acid ferment for souring milk. He, however, was never financially interested in the project.

A year or so before the Great War broke upon Europe, Metchnikoff had further intimation of the cardiac difficulties which from time to time had interrupted his work, so that when, in August, 1914, the declaration of war actually came, he returned from a holiday to find Paris and his laboratory given over completely to war measures. The effect upon his sensitive nature was overpowering. The one bright spot in this period was the occasion of his seventieth birthday, occurring on the sixteenth of May, 1915. The Pasteur Institute celebrated it by a jubilee, rendered notable by the eulogistic address of M. Roux. From that time on, though he made some desultory efforts to carry forward his work in a laboratory he had equipped at his home in the country, no real additions were made to the volume of his accomplishments. He became so much worse that it seemed best to move him into the city again and he was brought back to the Pasteur Institute and settled in the rooms formerly occupied by Pasteur, where he remained until his death on the fourteenth of July, 1916. Thus was completed the career of an exceptionally clear-thinking scientist, trained from early youth as a zoölogist, who had the insight to perceive the bearing of his biologic observations upon medical science and put them successfully to the proof.

MISCELLANY

RESOLUTIONS ADOPTED BY THE MEDICAL SOCIETY OF NEW JERSEY

November 11, 1932.

To Chairmen of Boards of Directors of Hospitals in New Jersey:

At the Annual Meeting of the Medical Society of New Jersey, that organization, having under consideration a subject which has recently aroused a good deal of interest—i.e., the relationship of physicians to hospital management—adopted the following resolutions, and instructed its Secretary to send a copy thereof to the Board of Directors of each and every hospital in this state:

> *Resolved*, (1) That inasmuch as the business management of hospitals is intimately associated with the medical and surgical care of the patients (for which hospitals exist), the Medical Staff of a hospital has a right to share with the Board of Trustees the management of all matters distinctly medical and, to this end, should be represented on boards or committees or by effective mutual conferences: and
>
> *Resolved*, (2) That approval is hereby given to the stand taken by the Essex County Medical Society and its resolutions in support of the action of the Medical Staff of the Hospital and Home for Crippled Children; and we furthermore feel that all members of this State Society should support these principles in their personal associations with hospitals.

The resolutions adopted by the Essex County Medical Society, and the principles embodied therein, were as follows:

> Hospitals exist principally for the medical and surgical care of the sick, which care must be in charge of competent physicians.
>
> Boards of Trustees of hospitals are made up of public-spirited men and women who have a sincere desire to serve the community, and are banded together in order that they may make possible the service that physicians give to patients.
>
> Medical Staffs are made up of physicians whose relative positions on the Staffs vary according as years of experience and service, and their ability, may have qualified them.
>
> Physicians, by reason of their trained and experienced knowledge of disease and its treatment, and because of their daily contact with hospitals and patients, are better qualified to understand and to solve the professional problems of hospitals; and because of their intimate knowledge of each other and of each other's work, are the only ones able to correctly judge the relative abilities of physicians.
>
> Boards of Trustees and Medical Staffs each have special functions, some of which are distinct. There are, however, certain functions that should be performed jointly by Trustees, who have the executive authority, and by the Staff, who have the expert knowledge. All problems connected with the essential purpose of a hospital, that is with the service which physicians give to patients, are better understood by the physicians and should be solved jointly by Trustees and Staff; also problems connected

with changes in the Medical Staff of a hospital are better understood by the physicians and should be solved by coöperation of Trustees and Staff.

We believe, moreover, that the Senior Staff of every hospital, because of the many years of daily contact with the hospital and because of the vast amount of service that they have given to patients of the hospital, have a heartfelt interest in the welfare of that hospital. The hospital becomes an integral part of the spiritual life of each. We believe that in shaping the administration of hospitals, physicians should have a large share, not because the physicians wish it, but because hospitals need their advice.

We, therefore, believe that:

(1) Medical Staffs should have adequate representation on Boards of Trustees.

(2) We believe that there should be no change in the medical policy of a hospital without proper consultation with the Staff.

(3) We believe that no physician who has efficiently and faithfully and loyally served on a hospital staff should be removed or demoted without proper consultation with representative members of the Staff.

(4) We believe that the medical profession should present a united front in support of the foregoing general principles, which are in the interest of the hospitals which the profession dearly loves and of the patients whom they serve.

We trust that you will accept this message in the spirit of coöperation and the desire to avoid or prevent trouble.

Very truly yours,

J. B. MORRISON, M.D., *Recording Secretary*,
Medical Society of New Jersey.

A RADIO MESSAGE PREPARED AND SPONSORED BY THE COMMITTEE ON PUBLIC EDUCATION OF THE MASSACHUSETTS MEDICAL SOCIETY FOR THE DEPARTMENT OF PUBLIC HEALTH

HOW ARE YOUR ARTERIES?*

BY SOMA WEISS, M.D.

In order to understand diseases of the arteries, it is essential to know certain fundamental facts concerning the normal body. The body is built up of an inconceivable number of infinitesimal units called cells. The composite lives of these cells make up and define human life. One of the fundamental characteristics of life is its ability to utilize energy and to change one form of energy into another. The actual transformation of this energy takes place for the most part within the individual cells. If, therefore, life is to proceed undisturbed, energy in the form of food substances must be supplied to the cells and waste products must be eliminated. This great and fundamental task is accomplished mainly by the blood. The blood, pumped by the rhythmic contraction of the heart into a tubing system called the blood vessels, or vascular system, circulates continuously throughout the body. The blood is pumped from the heart into large blood vessels, the arteries, which subdivide progressively into tiny vessels called capillaries. These capillaries, after passing food to the cells, unite again into larger and larger vessels which carry the blood back to the heart. As the blood particles travel the complete circuit of these vessels, they carry food to the cells, remove from them waste products, and carry manufactured substances from one part of the body to another. After becoming refreshed and reloaded, the blood particles are ready to start again on a second vital trip through the body. On an average, it takes them between forty and fifty seconds to complete the circuit.

The heart sends the blood into the arteries at a considerable pressure, and this pressure is called the arterial blood pressure. The reason that the arteries are mentioned so often in medical literature is that they are more apt to become diseased than any other part of the vascular system, and disease of an artery, just as disease of the root of a tree, involves the entire organ it supplies. A majority of diseases of the arteries have their origin in disturbances of the nutrition of the arterial wall. The arterial wall, like the organs of the body, consists of cells, and these cells require nutrition. Food for the arteries is supplied partly by exceedingly delicate blood vessels within the arterial wall, partly by simple diffusion through the inside wall of the artery as the blood rushes past. But supplying with blood a tissue which is under constant pressure, as is an arterial wall, is not easy; and, indeed, the task becomes more and more difficult as the years go by. Regardless of how efficiently the elimination of waste products from the cells is carried on, a certain amount of material will be deposited along the inner surface of the artery as well as between the cells. These accumulated deposits make the nutrition process increasingly difficult and as a result the cells of the wall of the artery become slowly hardened, brittle and degenerate. This whole process, that results in the disease called arteriosclerosis, is one of the serious menaces to long life. Physicians centuries ago established the axiom: "A man is as old as his arteries." When such changes as have been described occur in the arterial wall, the youthful elasticity of the blood vessels supplying the vital organs is lost, and the organs are, therefore, unable to respond promptly and efficiently to an emergency. The effect is the same whether the arteriosclerosis attacks the brain, the heart, the kidney, or any other vital organ. The function of the organ becomes limited, and with this the activity of the whole body is lessened.

*Broadcast: July 5, 1932. Station: WBZ—Hotel Bradford, Boston. Time: 4:20 P.M.

Disease of the arteries which, because of the great pressure within the vessel wall, leads eventually to rupture of the vessels, entails not only the danger of blood loss from hemorrhage, but also of destruction of the tissues in the neighborhood of the rupture. Hardened arteries, although they feel firm, are much less resistant than the normal soft, elastic arteries; and almost always rupture of the arteries in the brain ("shock"), or in other organs of the body, is preceded by an arteriosclerotic condition of the wall of the arteries.

Aside from the serious result of this hardening process of the arteries, there are many other less common diseases. The arteries are supplied with nerves and muscles and hence under certain conditions, such as mental tension or pathology of the small arteries, they become irritable and are apt, under emotional strain, to go into spasm or cramp. If such a cramp persists for a long time, it may cause high blood pressure. If the cramp is localized and involves only the arterial tree of one organ, the function of that single organ may be severely disturbed temporarily. The painful affection called angina pectoris is simply a cramp of the blood vessels supplying the heart; and the cramp is precipitated in the majority of instances by rage or other emotional strain. Similar spasms of the arteries may occur in the brain or over the lower extremities.

Of course, each disease of the arteries has its specific medical or surgical treatment. This treatment is outside the scope of this discussion; but there are certain fundamental principles which, if appreciated by the lay people, may aid in the prevention of arterial disease. A majority of diseases of the arteries are caused by excesses of life. Overeating, overwork, too much worry, too much excitement, are the most fundamental factors in the precipitation of these disorders. It must be remembered, as has been pointed out before, that arteries, like muscles, have the power of contraction and relaxation. During periods of bodily or mental activity, the arteries are in a state of contraction. During the periods of rest and sleep, the arteries are relaxed, the blood pressure falls, and the nutrition of the cells through the arterial wall is facilitated. Excesses keep the arteries in constant spasm and thus the organs they supply lose the rest and refueling that are essential to the long and efficient use of any machine. Overweight, overnutrition, especially with fatty foods, and mental strain should be avoided. The most essential preventive, in other words, is moderation. The achievement of personal independence, supported by a wise philosophy concerning the real values of life is practical insurance against diseases of the arteries.

If arterial diseases are recognized early and cared for, the chances are great that the patient will live a long and comfortable life with only a slight modification of his habits of living. But even if the condition has existed for so long a time that the vessels are affected, and through them the functions of certain organs have become limited, the patient may still anticipate a long and happy life although with limited activity. Of course, the early recognition of the disease is one of the most important means of defeating it. A discussion of arterial diseases can be closed in no better way than by repeating the advice of Hanfield Jones, an English physician who as early as 1876 said: "If I were bold enough to be a prophet, I should point to the time when the elder folks, instead of waiting till they have had a stroke of apoplexy or a touch of paralysis, or are laid up with arteriocapillary fibrosis or morbus brightii, and then hurriedly summoning a physician to do impossibilities, will seek his advice betimes, asking him to supervise their vital functions, regulate their mode of life, and teach them to stay the morbid changes which they know may be silently progressing."

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR OCTOBER, 1932

Scarlet fever continues the increased prevalence begun several months ago.

Anterior poliomyelitis, on the other hand, shows the lowest number of cases for October ever reported for this month.

Diphtheria, typhoid fever, pulmonary tuberculosis and lobar pneumonia have also made new low records for the month of October.

There has not as yet been any increase in the reporting of cases of influenza.

Measles, whooping cough and non-pulmonary tuberculosis are lower than is usual for this season of the year.

Epidemic cerebrospinal meningitis, mumps, chicken pox and German measles were reported about the number of times expected.

The reporting of gonorrhea for several months has fallen somewhat below the number of cases reported during the two previous years.

The reporting of syphilis, on the other hand, has been slightly better than the average for the two previous years.

RARE DISEASES

Anterior poliomyelitis was reported from Dedham, 1; Fall River, 1; New Bedford, 1; Wellesley, 1; Total, 4.

Dysentery was reported from Medfield, 20 (State Hospital); Medford, 1; New Bedford, 1; Somerville, 1; Worcester, 3; Total, 26.

Encephalitis lethargica was reported from Chicopee, 1.

Epidemic cerebrospinal meningitis was reported from Boston, 1; Everett, 1; Gloucester, 1; Hanover, 1; Leominster, 1; Westfield, 1; Winchester, 1; Total, 7.

Pellagra was reported from Boston, 1; Cambridge, 1; Total, 2.

Septic sore throat was reported from Attleboro, 1;

Boston, 3; Cambridge, 2; Lowell, 1; Medford, 1; Newton, 1; Northfield, 1; Total, 10.

Tetanus was reported from Leominster, 1.

Trachoma was reported from Boston, 2.

Trichinosis was reported from Burlington, 1; Medford, 1; Total, 2.

Typhus fever was reported from Boston, 1.

Undulant fever was reported from Belchertown, 1; Haverhill, 1; Sutton, 1; Total, 3.

MONTHLY REPORT OF CERTAIN COMMUNICABLE DISEASES

	Cases in Entire Pop.				Case Rates per 100,000 Pop.		
	Oct. 1932	Oct. 1931	Proso. Index*	Epi. Index†	Oct. 1932	Oct. 1931	Expected Rates‡
All Causes	3994	4448	—	—	92.9	104.0	—
Ant. Polio.	4	234	75	.05	.1	5.5	1.7
Diphtheria	111	194	374	.3	2.6	4.5	8.7
Ep. C. S. Men.	7	8	5	1.4	.2	.2	.1
Measles	198	173	606	.3	4.6	4.0	14.1
Pneumonia, Lobar	186	190	198	.9	4.3	4.4	4.6
Scarlet Fever	731	678	637	1.1	17.0	15.9	14.8
Tuberculosis, Pulmonary	309	332	343	.9	7.2	7.8	8.0
Typhoid Fever	31	34	34	.9	.7	.8	.8
Whooping Cough	272	323	523	.5	6.3	7.6	12.2
Chicken Pox	345	208	—	—	8.0	4.9	—
German Measles	27	36	—	—	.6	.8	—
Gonorrhea	579	662	—	—	13.5	15.5	—
Influenza	10	32	—	—	.2	.7	—
Mumps	216	292	—	—	5.0	6.8	—
Syphilis	366	355	—	—	8.5	8.3	—
Tuberculosis, Other Forms	39	33	—	—	.9	.8	—

*This index is an attempt to estimate the number of cases based on the trend during the past years which can be expected to occur, and is for the purpose of comparison with the number of cases which actually did occur.

†This ratio expresses how prevalent the disease is compared with the index mentioned above; 1.0 indicates that the actual number of cases equals the expected number. A larger number means a greater prevalence, and a smaller number a lesser prevalence than expected. Thus 2.0 would indicate twice the expected number, and .5 half the expected number of cases. The method used to determine the indices is described in the August 18, 1927 issue of the *Boston Medical and Surgical Journal*.

‡Calculated from the Prosodemic Index.

WHAT ARE THEY SINGING?

A DESCRIPTION OF THE CHRISTMAS SEAL

BY KENDALL EMERSON, M.D.

Managing Director, National Tuberculosis Association

The appearance of the cheery little Christmas seals on Thanksgiving Day marked the beginning of the second quarter century of the organized fight against tuberculosis in the United States. The design this year shows a little boy and girl, dressed in the costume of the Middle Ages, standing in the snow and lustily singing a carol in the warm red glow of a nearby window.

It is expected that during the campaign many persons will ask, "What are they singing?" The answer may very well be, "A hymn of thanks for the protection Christmas seals have given in the past, and a plea for the continuance of that protection."

The picture is especially appropriate because a large proportion of the funds raised by the sale of these seals is used by tuberculosis associations throughout the United States for discovering the disease among children and guarding them from it.

Why do children need such protection and how is it accomplished? It is a surprise to most people to learn that tuberculosis is one of the greatest causes of death among infants under one year of age, and that many children are so seriously infected that they break down with the active disease during the "teen" age.

It took thousands of tests and reports to develop the safeguards that now ward off this insidious disease from children. One doctor supervised the x-raying of thousands upon thousands of children and spent many years analyzing the carefully kept photos and records of each case. Other physicians made test after test upon children with a substance called tuberculin, which reveals, years before the active disease flares up, whether tubercle bacilli exist in a child's body. In such cases preventive treatment can be undertaken immediately. Careful observations have shown the effect of sunlight, diet, and sleep on the growing child and their effect upon the treatment of tuberculosis.

The Research Committee of the National Tuberculosis Association searches tirelessly for a cure for the disease, as well as making intensive efforts to improve existing means of discovery and treatment. The outstanding feat of this group to date has been the development of a new pure tuberculin,

which assures greatly increased accuracy in testing children for infection.

This committee also has devoted itself to the improvement of x-ray technique and x-ray materials, and noteworthy progress and contributions to this science have been made both in the methods of taking the photographs and in the materials used in their manufacture.

And so, bit by bit, our modern knowledge about

tuberculosis has been pieced together. Those facts as they concern children are as follows:

The majority of the entire population of the United States have tubercle bacilli in their bodies, even though all do not break down with the disease.

These bacilli may invade the body during childhood and even infancy.

The tuberculin test will show whether a child has been infected with the bacilli.

A child who has the bacilli in his body may have a condition known as the "childhood type of tuberculosis", which is often shown by the x-ray as darker shadows in the glands between the lungs, or in the lungs themselves. (This, of course, is not the active disease, but it is a warning that the "seeds" of the disease are present and that the child is in danger of breaking down with active tuberculosis if his health is not carefully watched.)

To keep children healthy, they should not be permitted to come into contact with a person who has tuberculosis. They should at all times be given proper amounts of sleep, day-time rest periods, good food, and play in sunshine and fresh air.

These facts point the way for the work and programs of many tuberculosis associations. Some provide free tuberculin tests, and x-rays if needed, for all school children. Others maintain a preventorium to which children who have the childhood type of tuberculosis may be sent free for treatment. Still other associations maintain free summer camps to which children who are underweight and generally under par are sent to be built up physically and thus aided to fight off tuberculosis.

So it is that the design of the little Christmas seal is appropriate. The singing children are both hymning their thanks and making a plea. And that plea is directed at you, because it is you who buy and use Christmas seals and thus make it possible to protect all children from tuberculosis—the disease that kills more persons between the age of 15 and 45 than any other disease.

DR. LAHEY ADDRESSES THE CALIFORNIA ACADEMY OF MEDICINE

Dr. Frank H. Lahey delivered the annual address before the California Academy of Medicine at San Francisco, California, on December 10, 1932.

Subject: "Gastric and Duodenal Ulcer; Its Combined Medical and Surgical Treatment."

AN HONOR CONFERRED ON DR. PHANEUF

Dr. Louis E. Phaneuf, Professor of Gynecology at Tufts College Medical School, has been recently elected to the International Society of Surgery. On Thursday afternoon, December 1, he addressed the Rhode Island Medical Society on Radium Therapy in Uterine Hemorrhages of Benign Origin — Technique and End Results.

THE RESIGNATION OF DR. CHANNING FROTHINGHAM

The resignation of Dr. Channing Frothingham as Associate Clinical Professor of Medicine in the Harvard Medical School has been received and accepted to take effect September 1, 1933. Dr. Frothingham, who has been on the staff of the Harvard Medical School since 1908, is to take charge of the Medical Department of the Faulkner Hospital, Jamaica Plain.

CORRESPONDENCE

PROBLEMS RESPECTING ORGANIZED MEDICAL PRACTICE

AN OPEN LETTER

242 Burncoat Street,
Worcester, Mass.,
December 8, 1932.

Editor of the *New England Journal of Medicine*,
8 The Fenway,
Boston, Mass.

Dear Editor,

Since the publication of the final report of the Committee on the Costs of Medical Care there cannot be the slightest doubt about the need of a complete change in the leadership of the American Medical Association. Its officials have apparently been enjoying sinecures which allowed them to devote their energies largely to using their official positions unethically to sell their personal services as writers, lecturers, and broadcasters. No wonder, then, that they have heaped upon those who have earnestly striven for the reformation of medicine destructive criticism and vituperative condemnation. No wonder they have vehemently decried any

suggested modification of the status quo of medicine, which has allowed them to create a rank medical trust for themselves, veritably a cabal, rather than the profession and the public.

Inexperienced in the actual practice of medicine, they are evidently unmindful of the fact that our country is undergoing an economic metamorphosis from the stage of wanton youth to that of sober maturity. No longer does it possess teeming undeveloped natural resources; no longer can it assimilate immigrants, either scum or cream; and already is it limiting offspring through birth control. In addition to these permanent changes demanding inevitable readjustments, it is confronted with the temporary but perplexing problems arising out of the World War and the postbellum prosperity bubble. If it is to survive this perilous period, it must forthwith substitute for unbridled license restricted liberty, for lawlessness lawfulness, for thriftlessness thriftiness, for rugged individualism with its racket worship harmonious coöperation with its moral vision, and for vacuous artificialities vital necessities. These social revolutions must necessarily affect medicine because it is coextensive with life and is administered by human agencies. In spite of these momentous transformations, however, our contemporary A. M. A. incumbents, dogmatic and domineering from too long tenure of office, desperately obstruct any proposed change in the primeval method of medical service.

To attack the vexing questions emphasized by the Committee on the Costs of Medical Care Dr. C.-E. A. Winslow has warned us of the indispensability of constructive guidance. Fortunately, the editors of several of our best state medical journals have conclusively shown by their consistent altruism and their genuine fellowship that they are qualified for the urgent practical leadership.

Let us, therefore, dismiss our present myopic leaders of the A. M. A., whose egotism and imperiousness have blinded them to the need of a more rational and more humane medical service. Let us thereby give them an opportunity to demonstrate, under such convincing circumstances as the prevailing economic chaos affords, their theory of medical competitive individualism, a heritage of primitive ages.

Yours truly,

G. W. HAIGH, M.D.

EL PASO COUNTY MEDICAL SOCIETY, EL PASO, TEXAS*

October 20, 1932.

Dear Doctor,

Enclosed you will find a copy of the resolution which was recently passed by the El Paso County Medical Society. It was voted unanimously to send a copy of this resolution to the secretary of every county medical society in the state of Texas; also to send a copy to the secretary of every state medical association in the United States.

The county medical societies in Texas are requested to send these or similar resolutions to all members of Congress and to give as much publicity to the subject as they can in their local papers.

We are asking the state secretaries to bring the matter before all the societies in their respective states in order that they may take similar action.

We think that the injustice of this legislation is not only of great importance to the taxpayers of the country but also to all physicians and hospitals —and to the veterans themselves.

We trust that this measure meets with your approval and would be glad to have a letter from you.

Very respectfully,

F. D. GARRETT, *President,*
RALPH H. HOMAN, *Secretary-Treasurer.*

A RESOLUTION BY THE EL PASO COUNTY MEDICAL SOCIETY

Directed to The Honorable United States Senate and House of Representatives of the United States of America, Washington, D. C., through the Honorable Morris Sheppard and the Honorable Tom S. Connolly and the Honorable R. E. Thomason, Representative of the 16th Congressional District, El Paso, Texas.

Requesting the repeal of certain laws and the amendment of others governing the hospitalization of World War Veterans of the United States Army, United States Navy and the United States Marine Corps.

Whereas: The appropriation for the relief of disabled veterans has now passed the sum of one billion dollars per year, and,

Whereas, The Veterans Bureau hospitals and Army General hospitals are taking care of large numbers of ex-service men for non-service connected disabilities, the expense of such care already amounting to $232,410,300 per year, being 39.51 per cent of the total cost of the World War Veterans Relief, with the probability that the amount will increase each year for a long while, and,

Whereas: This enormous expenditure not only puts a burdensome tax upon the public now, but also invites in the not distant future the enactment of further legislation by which an ever-increasing number of citizens will demand medical care and hospitalization at Government expense, and,

Whereas: A large per cent of beds in private hospitals and institutions in the United States are now vacant by reason of this government competition in the care of non-service connected disabilities, therefore be it

Resolved: That we feel that the present plans for hospitalization of non-service connected disabilities of war veterans are putting an unjust expenditure upon the people of the United States since it has been shown that the hospital service in non-government hospitals is adequate for the care of such disabilities.

*Received by Dr. Walter L. Burrage, Secretary of the Massachusetts Medical Society, November 21, 1932.

Resolved: That this Society should, and does appeal to the United States Senate and House of Representatives to give serious consideration to repealing laws authorizing this practice, or to the passage of such laws as will provide for the discontinuance of the hospitalization, or rendering of medical attention, to non-service connected disabilities arising in ex-service men, and favors the hospitalization and giving of proper medical care to all veterans for service connected disabilities only, and be it

Resolved: That the El Paso County Medical Society hereby goes on record as favoring a discontinuance of this service for non-service connected disabilities throughout the nation, and be it further

Resolved: That a copy of this Resolution be spread upon the minutes of this Association and a copy be forwarded to the offices of the Texas State Medical Association and the American Medical Association for their consideration and approval, and that copies be sent to the Honorable Morris Sheppard, the Honorable Tom S. Connolly, and the Honorable R. E. Thomason.

Respectfully submitted,
Signed
S. D. SWOPE,
T. J. MCCAMANT,
R. H. HOMAN,
Committee.

THE NATIONAL ECONOMY LEAGUE

November 23, 1932.

Editor, *New England Journal of Medicine,*

In your edition of November 10 I have read with interest your editorial headed "Unjust Legislation." It has occurred to me that you might be interested in publishing other articles from time to time on this situation. It has also occurred to me that through your publication you might be helpful in securing members for the National Economy League.

Yours very truly,
CARL P. DENNETT, *Chairman.*

RECENT DEATH

HEATH—ALFRED B. HEATH, M.D., a former resident of Townsend Street, Roxbury, Massachusetts, died suddenly in New York, December 4, 1932. He was port physician of Boston for several years and later an inspector of the Boston Health Department. He retired from professional life about twenty-five years ago.

NOTICES

CLINICS IN MEDICINE AT PETER BENT BRIGHAM HOSPITAL

On Thursdays at 3:30 P. M. in the Amphitheatre of the Peter Bent Brigham Hospital Dr. Henry A. Christian, Hersey Professor of the Theory and Practice of Physic, Harvard, and Physician-in-Chief, Peter Bent Brigham Hospital, will give a series of clinics which members of the medical profession are cordially invited to attend. The next clinic will be given on December 22.

Physicians and medical students are also invited to attend ward rounds of the Medical Staff of the Peter Bent Brigham Hospital held from 10-12 o'clock on Saturdays, as well as a clinical-pathological demonstration immediately following these rounds.

RADIO HEALTH MESSAGES

DECEMBER, 1932

Sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

Courtesy WBZ. Tuesdays, 4:15 P. M.

December
20 Chorea or St. Vitus' Dance
27 Hemorrhoids

STATE HOUSE BROADCAST

Sponsored by the Massachusetts Department of Public Health.

Courtesy WEEI. Fridays, 12:30 P. M.

Health Subjects of Public Interest discussed by the Division Directors of the Department.

RADIO HEALTH FORUM

Queries from the public are answered under the sponsorship of the Department of Public Health.

Courtesy WEEI. Fridays, 4:50 P. M.

Questions on Health and Prevention of Disease may be sent to Radio Health Forum, State Department of Public Health, State House, Boston.

REPORTS AND NOTICES OF MEETINGS

NEISSERIAN MEDICAL SOCIETY OF MASSACHUSETTS

The Neisserian Medical Society of Massachusetts held its stated meeting in Sprague Hall, 8 The Fenway, on Thursday evening, November 17, at 8:15 P. M. Dr. J. D. Barney presided.

Dr. Edward L. Keyes, Professor of Urology, Cornell University Medical College, addressed the Society and chose as his subject, "The Purposes of Therapy."

The speaker confined his remarks to gonorrhea in the male. In reference to the systemic disease, especially its joint manifestations, he made the following statements: (1) A man with joint manifestations, during the first attack, will show involvement of the same joints in future infections. (2) Should a man escape joint lesions in the initial onset and then develop articular manifestations during a later attack, successive infections will also produce joint involvement. (3) Young men usually get a much more severe form of the disease than older men and also suffer more from complications, for (4) the complications are directly proportional to the severity of the disease. The first purpose of therapy is an

avoidance of complications by a vigorous treatment of the acute stage of the disease.

One problem that confronts the practitioner in advising patients with this disease is the diagnosis of infectiousness. After long treatment, how can we tell whether a case is infectious? In illustrating the difficulty, the speaker cited a case that he had followed from the stage of periurethral abscess to that of freedom from gonococci in a smear taken after the use of sounds and prostatic massage. He had failed to show gonococci for six months and only a few pus cells in the urine. Contrary to the opinion of Dr. Keyes, the patient proved to be infectious.

In attempting to guarantee a cure to patients, certain rules are valuable. The smear should not be respected when it is negative. Occasionally the smear cannot be respected when it is positive if the history and clinical findings do not prove gonorrhea. The clinical course is the best standard to follow, for sounds and prostatic massage may cause a urethritis to reappear when smears have been consistently negative.

Dr. Keyes defined the purpose of passing sounds as that of traumatizing the tissues sufficiently to bring about a reaction of the gonococci which is within the limits of the body's capability to cope with them. Too much traumatization may cause an exacerbation of acute symptoms. A delicate use of these mechanical agents will draw out the gonococci from the glands and enable the body to overcome them by its slow but persistent bactericidal actions.

We know that the gonococcus is particular in its habits of growth. It prefers the human tissue. By sounds we make the urethra a test-tube in which the gonococci are stimulated to more active growth. By continuing this up to the point of cure we produce minimal autoinfections below the level of acute symptoms, and, so long as a reaction follows the stimulation by sounds, we know that the person is infectious.

Clinicians are agreed that the purpose of therapy in the acute stage is to cut it short, but are far removed from each other in the methods that they believe will achieve this end. Dr. Keyes no longer uses the permanganate treatment. He believes the repeated injection traumatizes the tissue at a time when it is least desirable. The immediate discharge is thus controlled only to go into the chronic stage. His first maxim is to discard any treatment that irritates in the acute stage. He prefers acriflavine (1-2000) injected once a day in small amounts. Sexual irritation is especially to be avoided.

In using urinary disinfectants, fluids should not be forced. The desire is to keep the urine concentrated in order that the disinfectant may act in concentrated form. Sandalwood oil is especially valuable in keeping chronic gonorrhea quieted even though it does not cure.

Treatment of the chronically inflamed anterior urethra necessitates a large enough meatus to allow good drainage. When the infection is persistent, enlargement by dilatation or cutting often hastens a cure.

The discussion that followed the address centered chiefly about the merits of permanganate in treating acute gonorrhea, and the relative value of dilute and concentrated urine in the early disease. The meeting adjourned at 10:30 P. M.

THE NEW ENGLAND PHYSICAL THERAPY SOCIETY

The New England Physical Therapy Society held its regular November meeting on Wednesday evening, November 16, at 8 P. M., in the Music Room of the Boston Square and Compass Club at 448 Beacon Street. Dr. George E. Percy presided.

The meeting was devoted to a general discussion of High Blood Pressure. The first speaker of the evening was Dr. John F. Valentine, who read a paper on "Etiological Factors in Arteriosclerosis." A first group of cases he described as referable to a vascular inflammatory process, either acute or chronic. A second group usually appears after middle age and depends upon a combined inflammatory and degenerative process, considered a physiological accompaniment of senility and commonly termed atheroma. The influence of the poisons of syphilis, gout, and rheumatism on the process was emphasized. The association of the disease with nephritis, lead poisoning, and advancing years was discussed. Heredity was called upon to explain the great variation in the course and severity of the disease. Obstruction was given as one cause for the development of atheroma and Dr. Valentine cited a case of mitral stenosis in which the systemic blood vessels were normal, but the pulmonary vessels showed marked arteriosclerosis. Excesses in eating, drinking, and physical exertion lead to hypertension and secondarily to sclerotic arterial changes. The tense life led by the modern business man definitely predisposes to atheroma. Intemperance of any sort, therefore, is of great significance in the causation of arteriosclerosis.

The next speaker was Dr. George B. Carr, who presented a paper on "Angina Pectoris." The factors cited by the preceding speaker as causative for atheroma were given as of etiological significance also for Angina Pectoris. The pathology and symptomatology of the disease was adequately presented as well as the differential diagnosis from Gastralgia and Pseudo-angina. In the former, there is no shoulder and arm pain or fixation of the body; in the latter, there is rarely fixation of the body and the attack usually follows emotional excitement in neurotic women. Dr. Carr advised inhalation of amyl nitrite and hot applications to the precordium for symptomatic treatment. Nitroglycerine is found very useful if used early and in doses of gr. 1/100 to 1/50. If these fail, one has to resort to subcutaneous morphine and atropine. The important treatment for the patient, however, is that in the interval between attacks. Several procedures have been rec-

ommended, but Dr. Carr has had considerable success with diathermy treatment two or three times a week. He treats impending attacks with nitroglycerine.

The final speaker of the evening was Dr. Wilson F. Phillips, who read a paper on "Pathological Changes in Arteriosclerosis." He reviewed the important etiological factors and the main pathological features. The relationship between arteriosclerosis and hypertension due to adrenal hyperfunction and "fast living" was discussed. He emphasized the fact that arteriosclerosis is an end result representing a progressive pathological condition which is usually not recognized till after the harm has been done. He advised frequent or periodic examination by well-trained clinicians for early diagnosis and prevention. Dr. Phillips discussed the rôle of heredity in the disease and suggested that metabolic disturbances such as dysfunction of pituitary, parathyroid, and other incretory glands may be of considerable importance in the etiology of atheroma. Similarly the enzymes of the digestive juices may be of significance.

Atheromatous changes are most common in the aorta, less frequent in the mesenteric arteries, and rare in the pulmonary arteries. The various types of arteriosclerotic processes and their relation to myocarditis and nephritis were discussed. Dr. Phillips cited a recent report of Sands (*J. A. M. A.*, 99:1599) who regards superior intelligence and increased mental activity as factors influencing the development of arteriosclerosis of the cerebral vessels. Mental symptoms are prominent with sclerosis of the smaller vessels, whereas sclerosis of the larger vessels leads to paresis, anesthesia, and paralysis. Agraphia, aphasia, monoplegia, and hemiplegia are end results. Thrombosis of the cerebral vessels is more apt to occur when the circulation is slowed and hence in the early morning hours. Dr. Phillips suggested that the profession could do most for the well-being of the community by the study of constructive diet and proper mode of living.

A very interesting discussion followed the formal presentation of papers. Dr. Percy reported a case of Raynaud's Disease Cured by Ultraviolet Radiation. The patient had already had an amputation of a gangrenous toe. Dr. McFee described invariable benefit and relaxation in patients with hypertension by the use of autocondensation. He reported more lasting relief with the Tesla than with the d'Arsonval current. Dr. Morse gave a very interesting discussion of the relation of intestinal toxemia to hypertension. He reported cases of hypertension in which colonic irrigation reduced the blood pressure from 200 to 160. The improvement appears to be permanent provided the prescribed diet is followed and intestinal stasis prevented. Intestinal disorders should therefore be recognized early and corrected for prophylaxis against hypertension. Dr. Valentine cited an interesting case of severe angina pectoris which was not affected either by autocondensation or autoconduction but which was controlled very nicely by iodide of potash. In closing the discussion, Dr. Carr stated that the best advice for patients is to be temperate in all things but water.

LECTURE ON THE CARE OF THE PATIENT

Delivering this year's lecture on "The Care of the Patient" at the Harvard Medical School, November 15, Dr. Roger I. Lee of Boston traced the development of the methods of caring for ill persons down to the modern trend of treating each case individually. Such care is to be evaluated from the scientific point of view rather than from the opinion of the patient or his family. This is the first important point, for patients are not good judges of the validity of their care.

The old-time medicine man, in his care of the patient, taught the violent procedures of bleeding, purging, and causing the patient to vomit for most all diseases. Then the days of Pathology and Bacteriology, and the resultant Surgery and Medicine, with their objective exactness, led to the days of therapeutic nihilism—no pathology demonstrable, no disease, no treatment. Homeopathy and Christian Science represented a revolt against the strong-arm overdrastic medication of the former days, and a reflection of the fact that exact anatomical variation from normal is not the whole story of disease, and that there are certain conditions known as functional disturbances.

Today we get, for example, not a gastric ulcer to treat, but rather a patient with gastric ulcer. The problems of why certain people get certain diseases and why symptoms of disease vary with the individual keep coming up for consideration and study. In the treatment of tuberculosis and typhoid fever, in particular, the concept of tending to the whole body has been born. The care of arthritis, insanity and many other conditions can also be listed in this category.

In short, the care of the patient depends on the physician's interest in the patient's every function—gastro-intestinal, pulmonary, hemodynamics, psychic systems, etc. The ultimate result depends, to be sure, on the virulence of the germ, the treatment, resistance of the host, etc., but the very important factor of the desire to live is often the thing that turns the balance, and this factor is also always to be considered in caring for the patient.

HARVARD MEDICAL SOCIETY

The Harvard Medical Society held its stated meeting on Tuesday evening, November 15, at 8:15 P. M., in the Surgical Amphitheater of the Peter Bent Brigham Hospital. Dr. John Homans presided. The subject for discussion was Hyperparathyroidism.

Dr. Joseph C. Aub illustrated his remarks with two cases of hyperparathyroidism. The first was a woman of 44 who was well until the spring of 1932, when she had a pain in her right hip. X-ray films revealed a cyst in the left ilium and also a renal

calculus. The blood calcium was high and the phosphorus low. The calcium excretion in the urine was three times the normal amount on a low calcium diet. These findings established the probable diagnosis of hyperparathyroidism, though she has not yet been operated upon.

The second patient, a boy of 15, was well until three years ago when he had erysipelas. Since then he has had difficulty in walking and has felt poorly. Early this year the pathological report on an epulis removed from his jaw came back as benign giant cell tumor. It recurred and was again removed. At this time he was suffering from polydipsia, polyuria, anorexia, and was beginning to vomit. X-ray and blood studies confirmed the previous diagnosis of parathyroid tumor, and there was a palpable mass in his neck. This was removed at operation, since which time the patient has enjoyed good health.

Dr. Aub stated that no condition produces this disease except an adenoma of the parathyroid gland. Of special interest are the changes in the blood arising from hypersecretion of parathormone. The deviations from normal that are most frequently seen are (1) a high blood calcium, (2) a low blood phosphorus, (3) an increased phosphatase, which is an enzyme normally found in the blood, bone, kidney and gastro-intestinal tract.

With the rise in blood calcium there follows an increased excretion of this substance through the kidney, and as a result the calcium stores of the body become depleted. The bones show marked thinning when x-ray films are taken, and in many instances cysts may be seen in the bone shadows. Owing to an increased excretion of calcium through the kidney, stones form in the urinary tract in twenty-five per cent of the cases.

Surgical removal of the parathyroid tumor leads to a return of the blood calcium and phosphorus to normal. In the first case cited, the phosphatase has not receded from its previously high level.

There are three theories advanced to explain the action of parathormone (parathyroid hormone) in raising the calcium level of the blood. It may act by lowering the blood phosphorus, thus allowing the blood calcium to rise; by increasing the saturation level of calcium in the blood; or by stimulating the osteoclasts of the bone to break down bone and thus liberate calcium.

Dr. Oliver Cope, Surgical Resident at the Massachusetts General Hospital, spoke of unusual features in cases of operated parathyroid tumor cases. Seven such cases have been treated surgically at the Massachusetts General Hospital.

The first case history was that of a girl with rachitic deformities of the wrists and a typical picture of renal rickets. She had polyuria, polydipsia and a small phenolsulphonphthalein excretion. The blood calcium and phosphorus were elevated. A parathyroid tumor was found at operation. The patient was helped very little by this operative procedure, because she already had severely damaged kidneys. Dr. Cope stated that among the cases formerly diagnosed as renal rickets, there are probably a number of cases of parathyroid tumor.

Another case was bedridden before operation two years ago, at which time no tumor was found, but two normal parathyroid glands were removed. Whereas the blood studies remained the same as previous to operation, the clinical improvement was remarkable, due to a high calcium and phosphorus diet. The x-ray showed a recalcification of the bones. However, kidney damage progressed, producing a picture of true nephritis, necessitating a second surgical exploration, at which time a tumor was found. Medical treatment of these cases is contraindicated since it increases the kidney damage.

Dr. Churchill spoke about the surgical procedures in removing the tumor. One of the great difficulties is in locating the tumor when it is not palpable. One case was that of an old sea captain who had shrunk several inches in height and was first seen in 1926. Since then he has been subjected to seven operations, including dissection of the two submaxillary triangles, retrotracheal and retro-esophageal exposure, and finally a mediastinotomy, at which operation the tumor was found.

The embryology of the glands is such that they may be found anywhere from the submaxillary triangle to the mediastinum. Their most usual location is along the posterior surface of the thyroid glands.

When the tumor is located in the mediastinum it may be palpated through the incision in the neck. Occasionally removal through this route is difficult and a splitting of the sternum must be undertaken. When this is done, it should be a separate operation from that on the neck. It is not wise to remove a normal parathyroid gland when no tumor is found, because of the difficulty in decision that may arise at a later operation when the tumor is located.

In discussing the x-ray as a method of diagnosing this condition, Dr. G. W. Holmes mentioned the following factors, (1) spontaneous fractures, (2) stones in the kidney, (3) tooth changes, especially about the roots, simulating abscesses involving several teeth, (3) mottling of the skull bones, (4) cysts appearing in the bones, (5) occasional calcification of the parathyroid gland, (6) demonstration of a shadow in the mediastinum. Dr. Holmes suggested that radiation of the tumor might be successful, but two cases so treated at the Massachusetts General Hospital were not benefited.

Dr. F. Albright stated that surgical treatment is the hope for curing these patients. Medically the treatment fails sooner or later, for renal damage results from interstitial deposits of calcium salts or formation of calculi.

Dr. Harvey Cushing mentioned the fact that, in the polyglandular syndrome arising from a basophilic adenoma of the anterior lobe of the pituitary gland, there are seen changes suggestive of hyperparathyroidism, due not to a tumor of the parathyroid gland, but rather to an overactive normal gland.

THE NEW ENGLAND ROENTGEN RAY SOCIETY

The November meeting of The New England Roentgen Ray Society was held at the Boston Medical Library on Friday, November 18, at 8 P.M. After a very brief business meeting the presiding officer introduced Dr. Kurt H. Thoma, of the Harvard Dental School, who presented "A Roentgen Clinic of Jaw Lesions."

The material to be presented was introduced by a brief systematic classification, which was adapted from the index to a text which Dr. Thoma is preparing on "Clinical Pathology of the Jaws." His classification follows: 1. Endocrine disturbances, a. Acromegaly, b. Generalized osteitis fibrosa; 2. General diseases of uncertain etiology, a. Osteitis deformans (Paget's Disease), b. Leontiasis ossea, c. Xanthomatosis (disturbance of lipoid metabolism); 3. Fissural cysts, a. Facial cleft cysts, b. Incisive canal cysts; 4. Traumatic cysts; 5. Odontogenic cysts, a. Follicular cysts, 1) Simple, 2) Dentigerous, 3) With odontoma, 4) Multiple, b. Radicular cysts; 1) Apical, 2) Multiple, c. Paradental cysts, 1) Follicular, 2) Radicular; 6. Benign giant cell tumor, 7. Neoplasms, a. Peripheral tumors, b. Odontogenic tumors, 1) Odontoma (from both epithelial and mesodermal origin), 2) Adamantinoma (origin only from epithelium of tooth germ), c. Osteogenic tumors, 1) Benign, a) Hyperostosis—Exostosis, b) Osteoma, c) Chondroma, 2) Malignant, a) Osteolytic osteogenic sarcoma, b) Osteoblastic osteogenic sarcoma (sclerosing), c) Telangiectatic osteogenic sarcoma, d. Non-osteogenic tumors of the jaw bones; 1) Central fibroma and fibro-sarcoma, 2) Central angioma, 3) Ewing's tumor) 4) Multiple myeloma, 5) Central mixed tumor (parotid type), e. Epithelial tumors, 1) Precancerous, 2) Adenoma, 3) Carcinoma (basal cell and epidermoid types), f. Metastatic tumors, 1) Sarcoma, 2) Carcinoma, 3) Hydronephroma.

The cases presented were especially instructive in that Dr. Thoma, by means of two lanterns, was able to project simultaneously slides showing the x-ray picture and the microscopic pathology. The first series of slides was selected to show osteolytic changes in the jaw giving almost identical x-ray pictures. A first group represented changes with cystic periphery. Five cases of follicular cyst (simple, dentigerous, and multiple) were shown. These lesions occur in young people, but may not be discovered till old age. One of the cases showed two cysts in the mandible. He preferred to call this multiple follicular cyst rather than multilocular follicular cyst which is a misnomer. Follicular cysts are generally not infected and include only the crown of the tooth. Radicular cysts, three cases of which were shown, occur in older people and are formed from a dental granuloma in which proliferation of epithelial rests (epithelial débris of Malassez) occur. The contents of the cyst are usually under considerable pressure and are infected. As a rule, only the apex of one tooth is connected with the cyst. The neighboring teeth are not involved and need not be extracted. The cyst wall shows a pathological picture of chronic inflammation. One interesting case was presented in which the cyst lining showed "foam cells" under the surface epithelium resembling the cells seen in xanthomatosis. As in the case of follicular cysts, radicular cysts may be multiple but not multilocular. Two cases of paradental cysts of the mandible were shown. Dr. Thoma pointed out that these cysts usually arise from the side of the third molar and grow both laterally and medially. One of these cases had been entirely missed by the ordinary dental x-ray film. Traumatic cysts are indistinguishable from the above by x-ray, but histological examination shows the cysts without epithelial lining. These cysts may rupture into the oral cavity and the patient's first complaint may be a bad taste in the mouth.

An incisive canal cyst in a male of 23 was shown. This type of cyst is always centrally located and often diagnosed as radicular cyst by the dentist. It is interesting to note that these cysts contain an epithelial lining derived from the nasopalatine duct, a developmental structure which is normally closed after birth, but which is often found opening as a pouch into either the oral or nasal cavities.

Two cases of osteolytic adamantinoma were shown. These lesions may appear as very small cysts, but in every case one must remember that the lining epithelium has proliferative potentialities. The epithelium may grow into the bone marrow spaces rather than into the cyst. The typical lesion is large, polycystic, and often with a history of trauma. One of the cases was interesting pathologically in that it showed epidermoid pearl formation. Dr. Thoma pointed out that in adamantinoma no enamel is ever formed. Enamel is elaborated only in the presence of dentine and if such were the case the tumor would properly be called an odontoma. A case of chondromyxoma of the mandible was shown, giving an appearance somewhat similar to that of adamantinoma. A case of generalized osteitis fibrosa was presented which could not be distinguished from epulis, but a blood calcium of 14.9 and blood phosphorus of 2.9 revealed its true nature. Cystic lesions in the jaw are a common finding in hyperparathyroidism. Two cases of mixed tumor of mandible and maxilla were shown in which the tumor tissue consisted of hyaline stroma and epithelial cells in alveolar arrangement. Extensive polycystic involvement of the jaw was represented by a case of plasma cell myeloma. Dr. Thoma stated that no two cases of myeloma in the jaw are alike.

The last examples of osteolytic changes with cystic periphery were three cases of epidermoid carcinoma and one of osteogenic sarcoma. In this last case, the histological preparation showed an area of osteogenic cells and another of foreign body giant cells. Dr. Thoma showed that, if this latter area alone had been seen, the diagnosis would have been incorrect. He concluded that the pres-

ence of giant cells merely denoted the previous existence of bone in that location.

The next series of slides illustrated osteolytic bone changes with osteitic margins. The first two cases were of syphilis and actinomycosis of the maxilla. A case of Scüller-Christian's disease was presented in a male child, aged 4, showing cystic defects in both mandible and maxilla. The skull showed the typical "geographic" appearance of xanthomatosis. A case of hyperparathyroidism was presented in which the histological specimen showed the bisection of a bone spicule, considered by Dr. Pick of Berlin as the most characteristic finding in von Recklinghausen's disease. The presence of hemosiderin in hyperparathyroidism lesions is very characteristic. In fact, the Germans call the lesion "Brown Tumor." Dr. Thoma emphasized that one cannot diagnose a case of giant cell tumor without first ruling out hyperparathyroidism by laboratory tests. Several other slides were shown in this group, including multiple myeloma and metastatic carcinoma, but the most interesting was a case of complete atrophy of the mandible and maxilla in a woman of 34. She had previously sustained pathological fractures in the jaw when struck by a nursing infant. There was gradual atrophy of the jaw until the x-ray showed complete absence of the mandible. Curiously enough, all her other bones were normal. Blood studies were made by Dr. Aub, who found her blood calcium and phosphorus both normal. Dr. Pick, who happened to be in this city at the time, suggested that it was a "Brown Tumor." Biopsy of the jaw showed a mere atrophy. Hardly any osteoblasts were present at all. The bone had been completely replaced by soft tissue. The case was explained as due either to a hunger or a neurotrophic atrophy.

A last series of slides was shown to represent progressive lesions in the jaw. The first was a case of Leontiasis Ossea in a nine-year-old boy. Two cases of sclerosing osteogenic sarcoma and one of peripheral fibrosarcoma were shown as belonging to this group. A marked sclerosis of the mandible was shown from a case of condensing osteomyelitis in a woman of 38. An example of Ewing's tumor (endothelial myeloma) was shown and Dr. Thoma pointed out some diagnostic points to differentiate it from osteogenic sarcoma. The last case presented was one of metastatic carcinoma from the prostate.

A brief discussion followed the presentation. The great skill required for x-ray diagnosis of jaw lesions was emphasized.

BOSTON CITY HOSPITAL

STAFF CLINICAL MEETING

Wednesday, December 28, 1932, at 8:15 P.M.
Cheever Amphitheatre

Dr. Robert M. Green. Introductory Remarks on the Work of the Gynecological and Obstetrical Service.

Dr. John T. Williams. Primary Carcinoma of the Vagina.

Dr. Frederick L. Good. The Course of Pregnancy and Labor following Operation for Suspension of the Uterus.

Dr. Joseph P. Cohen. Toxemias of Pregnancy.

Dr. Reginald D. Margeson. Treatment of Carcinoma of Uterus.

Dr. Benedict F. Boland. Treatment of Endocervicitis by Coring of the Cervix with the Radio Knife.

Dr. Emilio D'Errico. Inversion of the Uterus.

Dr. Kenneth G. Farnsworth. Trichomonas Vaginalis.

Dr. Benjamin Tenney, Jr. Pregnancy Complicated by Cirrhosis of Liver with Successful Termination.

COMMITTEE ON HOSPITAL CLINICS.

SESQUICENTENARY OF THE PROFESSORSHIP OF THEORY AND PRACTICE OF PHYSIC AT HARVARD (DECEMBER 24, 1782-DECEMBER 24, 1932)

Benjamin Waterhouse (1782-1812), James Jackson (1812-1836), John Ware (1836-1859), George C. Shattuck (1859-1873), Francis Minot (1873-1891), R. H. Fitz (1892-1908), Henry A. Christian (1908-).

ANNIVERSARY MEETING IN BUILDING D, HARVARD MEDICAL SCHOOL, AT 8:15 P.M., DECEMBER 20, 1932

PROGRAM

1. Benjamin Waterhouse and the Introduction of Vaccination into America. By his great-great-granddaughter, Margaret Thayer Lancaster.
2. James Jackson as a Professor of Medicine. By his great-grandson, George R. Minot, A.B., M.D., S.D., Professor of Medicine.
3. John Ware, the Family Physician. By his grandson, Robert M. Green, A.B., M.D., Assistant Professor of Applied Anatomy.
4. George Cheyne Shattuck and His Medical Contributions. By his grandson, George Cheever Shattuck, A.M., M.D., Assistant Professor of Tropical Medicine.
5. Francis Minot and Hemorrhage in the Newborn. By his grandson, Francis Minot Rackemann, A.B., M.D., Instructor in Medicine.
6. Reginald Heber Fitz and Appendicitis. By his son, Reginald Fitz, A.B., M.D., Associate Professor of Medicine.

Henry A. Christian, A.M., M.D., LL.D., S.D.,
Hersey Professor of the Theory and Practice of Physic, Presiding.

Anyone interested is invited to attend.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

The next meeting of the Middlesex South District Medical Society will be held January 13, at the Con-

tinental Hotel, Cambridge, at 12 o'clock. The speaker will be Dr. Morris Fishbein. Subject: The Costs of Medical Care.

ALEXANDER A. LEVI, M.D., *Secretary.*

BOSTON MEDICAL HISTORY CLUB

BOSTON MEDICAL LIBRARY

Monday, December 19, 1932, at 8:15 P.M.

Dr. Paul D. White will give an address entitled "A Visit to Some of the Medical Shrines of Ancient Greece" which will be illustrated by moving pictures.

All members of the medical profession, medical students and other interested persons are invited to attend this meeting.

JAMES F. BALLARD, *Secretary.*

MASSACHUSETTS PSYCHIATRIC ASSOCIATION

The next meeting of the Massachusetts Psychiatric Association will be held at the Boston Psychopathic Hospital, Wednesday evening, December 21, at eight o'clock.

PROGRAM

"A Study of Clinical Variables in So-Called Schizoid Personalities," by Dr. J. Kasanin, Clinical Director, Rhode Island State Hospital, and Miss Zitha Rosen.

"Possible Constitutional Factors in Behavior Problems," by Allan Winter Rowe, Ph.D.

OSCAR J. RAEDER, M.D., *Secretary.*

SOCIETY MEETINGS
CONGRESSES AND CONFERENCES

December 15—New England Hospital for Women and Children. See notice on page 1067, issue of December 8.

December 16—New England Roentgen Ray Society. See notice on page 1067, issue of December 8.

December 19—Boston Medical History Club. See notice above.

December 20—Sesquicentenary of the Professorship of Theory and Practice of Physic at Harvard, (December 24, 1782 - December 24, 1932). See page 1123.

December 20—South End Medical Club. See page 1066, issue of December 8.

December 21—Massachusetts Psychiatric Association. See notice elsewhere on this page.

December 22—Clinics in Medicine at Peter Bent Brigham Hospital. See page 1118.

December 28—Boston City Hospital. See page 1123.

January 12 - May 12—The William Harvey Society. See schedule on page 765, issue of October 27.

January 19 - May 17—New England Physical Therapy Society. See schedule on page 1010, issue of December 1.

February 6-10—The American College of Physicians. See page 765, issue of October 27.

February 8 - April 5—The New England Heart Association. See page 1011, issue of December 1.

February 17 and 18—The New England Hospital Association. See notice on page 911, issue of November 17.

DISTRICT MEDICAL SOCIETIES

ESSEX NORTH DISTRICT MEDICAL SOCIETY

January 4—Wednesday, Semi-Annual Meeting. Program to be announced.

May 3—Wednesday, Annual Meeting. Program to be announced.

ESSEX SOUTH DISTRICT MEDICAL SOCIETY

Tentative Program
1933

Wednesday, January 4, 1933—Danvers State Hospital, Hathorne. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. A. Warren Stearns, Dean of Tufts College Medical School.

Wednesday, February 1, 1933—Council Meeting, Boston.

Wednesday, March 8, 1933—Lynn Hospital. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. Soma Weiss, Boston City Hospital. Subject: Arterial Hypertension.

Wednesday, April 5, 1933—Essex Sanatorium, Middleton. Clinic 5 P. M. Dinner 7 P. M. Speaker: Dr. Wilson G. Smillie, Professor of Public Health Administration, School of Public Health, Harvard University. Subject: Common Colds.

Thursday, May 4, 1933—Censors' Meeting, Salem Hospital, 3:30 P. M.

Tuesday, May 9, 1933—Annual Meeting. Salem Country Club, Forest Street, Peabody. Golf in afternoon; greens fee $2.00. Dinner at 7 P. M. Speaker: Dr. George Burgess Magrath. Subject to be announced later. Ladies invited.

R. E. STONE, M.D., Secretary.

FRANKLIN DISTRICT MEDICAL SOCIETY

Meetings of the Franklin District Medical Society will be held at the Weldon in Greenfield on the second Tuesday of January, March and May.

CHARLES MOLINE, Secretary.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

The program of the Middlesex East District Medical Society for the coming year is as follows:

January 11 at Wakefield.
March 15 at Melrose.
May, at the Meadowbrook Club, Reading.

ALLAN R. CUNNINGHAM, Secretary.

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

January 13—See notice on page 1123.

NORFOLK DISTRICT MEDICAL SOCIETY

January 31, 1933—Roxbury Masonic Temple, 8 P. M. Subject: "Stomach Surgery"—Motion pictures. Dr. William R. Morrison.

February 28, 1933—Time and place to be announced. "The Diagnosis and Treatment of Anemia," by Dr. William P. Murphy.

March 28, 1933—Time, place and subject to be announced. Speaker will be Dr. J. P. O'Hare.

May—Annual Meeting. Time, place and subject to be announced.

FRANK S. CRUICKSHANK, M.D., Secretary.
1695 Beacon Street, Brookline.

SUFFOLK DISTRICT MEDICAL SOCIETY

Wednesdays at 8:15 P. M.

January 25, 1933—General Meeting in association with the Boston Medical Library at the Boston Medical Library. Titles and speakers to be announced later.

March 29, 1933—Clinical Program, Massachusetts General Hospital.

April 26, 1933—Annual Meeting. Election of Officers. Scientific Program—Titles and speakers to be announced later.

The Medical Profession is cordially invited to attend all of these meetings.

WILLIAM H. ROBEY, M.D., President,
LELAND S. McKITTRICK, M.D., Secretary,
HILBERT F. DAY, M.D., Boston Medical Library.

WORCESTER DISTRICT MEDICAL SOCIETY

Wednesday, January 11—Dinner and meeting at the Worcester City Hospital. Paper by Dr. Morris Fishbein, Editor of the Journal of the American Medical Association.

Wednesday, February 8—Dinner and scientific meeting at the Worcester State Hospital. Program to be announced later.

Wednesday, March 8—Dinner and scientific program at the Memorial Hospital, Worcester. Program to be announced later.

Wednesday, April 12—Dinner and scientific meeting at the Rutland State Hospital. Scientific program to be announced later.

Wednesday, May 10—The Annual Meeting. Place and program to be announced later.

ERWIN C. MILLER, Secretary.